HRS DOCUMENTATION RECORD

Name of Site: Colonial Creosote

CONTACT PERSONS

Site Investigation:	Brenda Nixon Cook, EPA Region 6	(214) 665-7436
	(Name)	(Telephone)
Documentation Record:	Brenda Nixon Cook, EPA Region 6	(214) 665-7436
	(Name)	(Telephone)

Pathways, Components, or Threats Not Evaluated

1) **Ground Water Pathway:** Based on information available at this time, further evaluation of the ground water migration pathway would not significantly affect the listing decision (Ref. 1, Sec. 2.2.3).

2) **Surface Water Pathway: Ground Water to Surface Water Migration Component:** The Surface Water Pathway has been scored for the Human Food Chain Threat and Environmental Threat. The Ground Water to Surface Water Migration pathway has not been scored. Based on information available at this time, evaluation of this component would not significantly affect the listing decision (Ref. 1, Sec. 2.2.3).

3) **Air Migration Pathway:** Based on information available at this time, evaluation of the air migration pathway would not significantly affect the listing decision (Ref. 1, Sec. 2.2.3).

4) **Soil Exposure Pathway:** Based on information available at this time, evaluation of the soil exposure pathway would not significantly affect the listing decision (Ref. 1, Sec. 2.2.3).

HRS DOCUMENTATION RECORD

Name of Site:	Colonial Creosote
CERCLIS Number:	LAN000607134
Site Spill Identifier Number (SSID):	A6Z7
EPA Region:	6 Date Prepared: March 2015
Street Address of Site*:	Hickory Avenue (Fig.1)
County and State:	Washington Parish, LA 70429
General Location in the State:	The site is located in the southeast portion of the City of Bogalusa in the southeast portion of the state (Fig. 1).
Topographic Map:	Bogalusa East Quadrangle, Louisiana, 1997 (Ref. 3, p. 1)

Latitude*: 30^{o} 46' 05" North Longitude*: 89^{o} 51' 50" West (measured approximately 500 ft NNE of the site office building) (Ref. 11, p. 1; Ref. 13, p. 4; Ref. 19, p. 1).

Air Pathway	NS
Ground Water Pathway	NS
Soil Exposure Pathway	NS
Surface Water Pathway	100.00
HRS SITE SCORE	**50.00**

* The street address, coordinates, and contaminant locations presented in this HRS documentation record identify the general area the site is located. They represent one or more locations EPA considers to be part of the site based on the screening information EPA used to evaluate the site for NPL listing. EPA lists national priorities among the known "releases or threatened releases" of hazardous substances; thus, the focus is on the release, not precisely delineated boundaries. A site is defined as where a hazardous substance has been "deposited, stored, disposed, or placed, or has otherwise come to be located." Generally, HRS scoring and the subsequent listing of a release merely represent the initial determination that a certain area may need to be addressed under CERCLA. Accordingly, EPA contemplates that the preliminary description of facility boundaries at the time of scoring will be refined as more information is developed as to where the contamination has come to be located.

FIGURES

NOTES TO THE
READER

Tracking numbers are assigned by the region to every page of every reference. The tracking number consists of the reference number followed by the page number within that reference. A tracking number will have a two-digit number followed by the sequential number (for example, 05 001; 05 002).

The following rules were used when citing references in the HRS (Hazard Ranking System) package.

1. The tracking numbers are cited for all references.

2. Hazardous substances are listed by how they appear in the Superfund Chemical Data Matrix (SCDM).

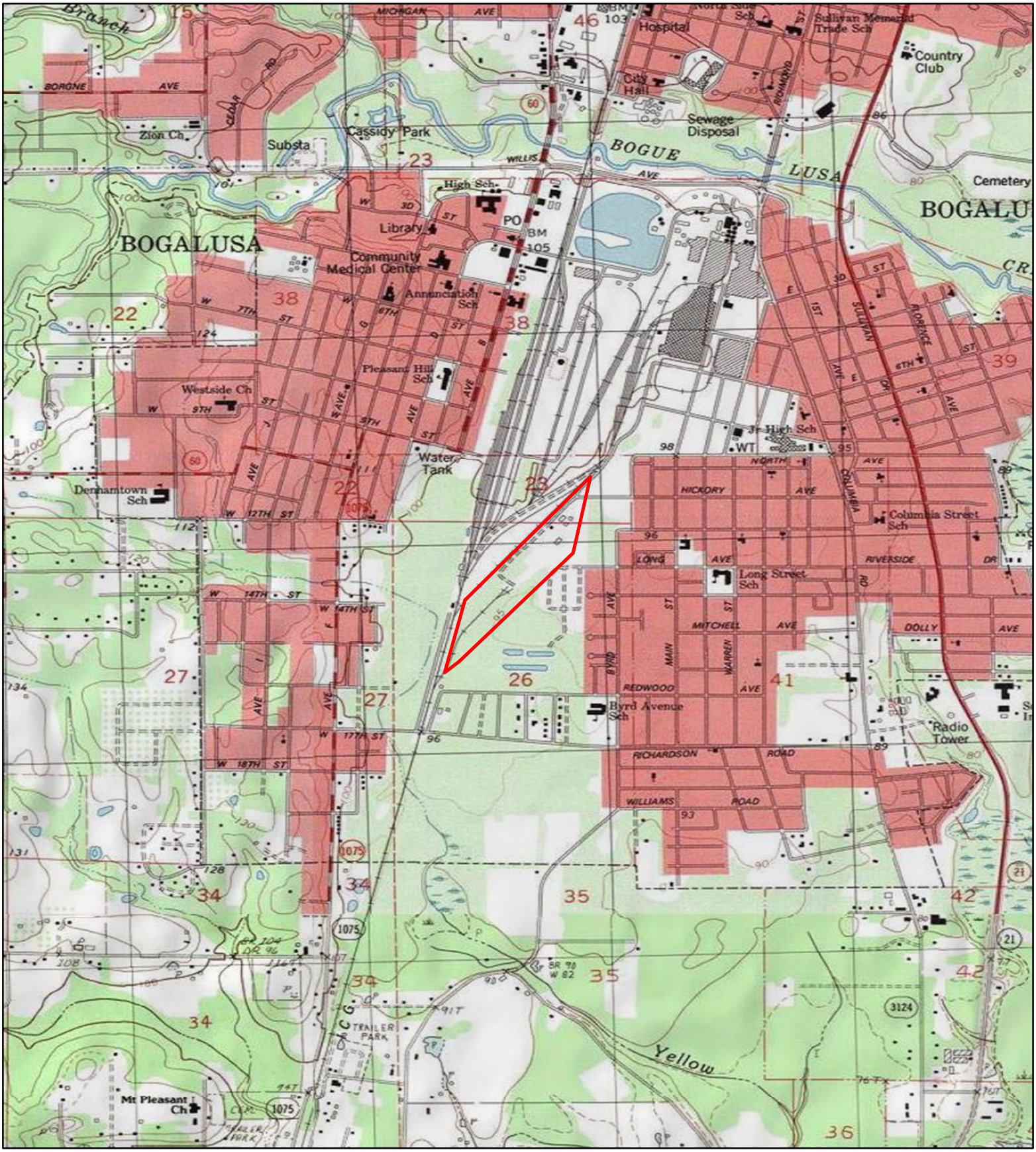
3. Significant figures: Calculations are reported to two significant figures to the right of the decimal place when the HRS does not specify rounding.

4. Abbreviations/Conventions used to identify references and citations:

Figure	Fig
Number	No.
Reference	Ref.
Section	Sec.
Single Pages	p.
Multiple Pages	pp.
"."	Next Reference
()	Selected acronyms

ABBREVIATIONS

BGS	below ground surface
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CFS	cubic feet per second
ESI	expanded site inspection
HWD	Hazardous Waste Division
HRS	Hazard Ranking System
LDEQ	Louisiana Department of Environmental Quality
LDNR	Louisiana Department of Natural Resources
LDWF	Louisiana Department of Wildlife and Fisheries
NPDES	National Pollutant Discharge Elimination System
NGV	National Geodetic Vertical Datum
NWI	National Wetlands Inventory
OFS	Overland Flow Segment
PAH	polynuclear aromatic hydrocarbon
PPE	probable point of entry
PR	Parish Road
PVC	polyvinyl chloride
RA	removal assessment
RPB	Response and Prevention Branch
RCRA	Resource Conservation and Recovery Act of 1976
RSD	Remediation Services Division
START	Superfund Technical Assessment and Response Team
SA	site assessment
SI	site inspection
SCDM	Superfund Chemical Data Matrix
SQL	Sample Quantitation Limit
SSID	Site Spill Identifier Number
TAL	Target Analyte List
TAT	Technical Assistance Team
TCL	Target Compound List
TDL	Target Distance Limit
TSD	treatment/storage/disposal



EPA United States Environmental Protection Agency

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Figure 1. Facility Location
Colonial Creosote
Bogalusa, Washington Parish, Louisiana

Legend

Facility Boundary *

TDD No. 9/DYNAMAC-077-14-001
CERCLIS No. LAN000607134

Source:
USGS Topographic Map of
Bogalusa East, Bogalusa West,
Sun and Henleyfield Quadrangles (Ref. 5, p. 1-4)

* Facility boundary annotated by EPA START-3 on 2/11/15 (Ref. 15, p. 17)

0 0.25 0.5 1 Miles

1:24,000

N W E S

EPA United States Environmental Protection Agency

DYNAMAC® CORPORATION

Figure 2. Aerial Facility Sketch
Colonial Creosote
Bogalusa, Washington Parish, Louisiana

TDD No. 9/DYNAMAC-077-14-001
CERCLIS No. LAN000607134

Legend

Facility Boundary *

Base Map Source (Ref. 47, p. 1)
*Facility Boundary Annotated by EPA START-3 on 2/10/15 (Ref. 15, p. 17)

0 300 600 1,200 Feet

1:5,000

N
W E
S

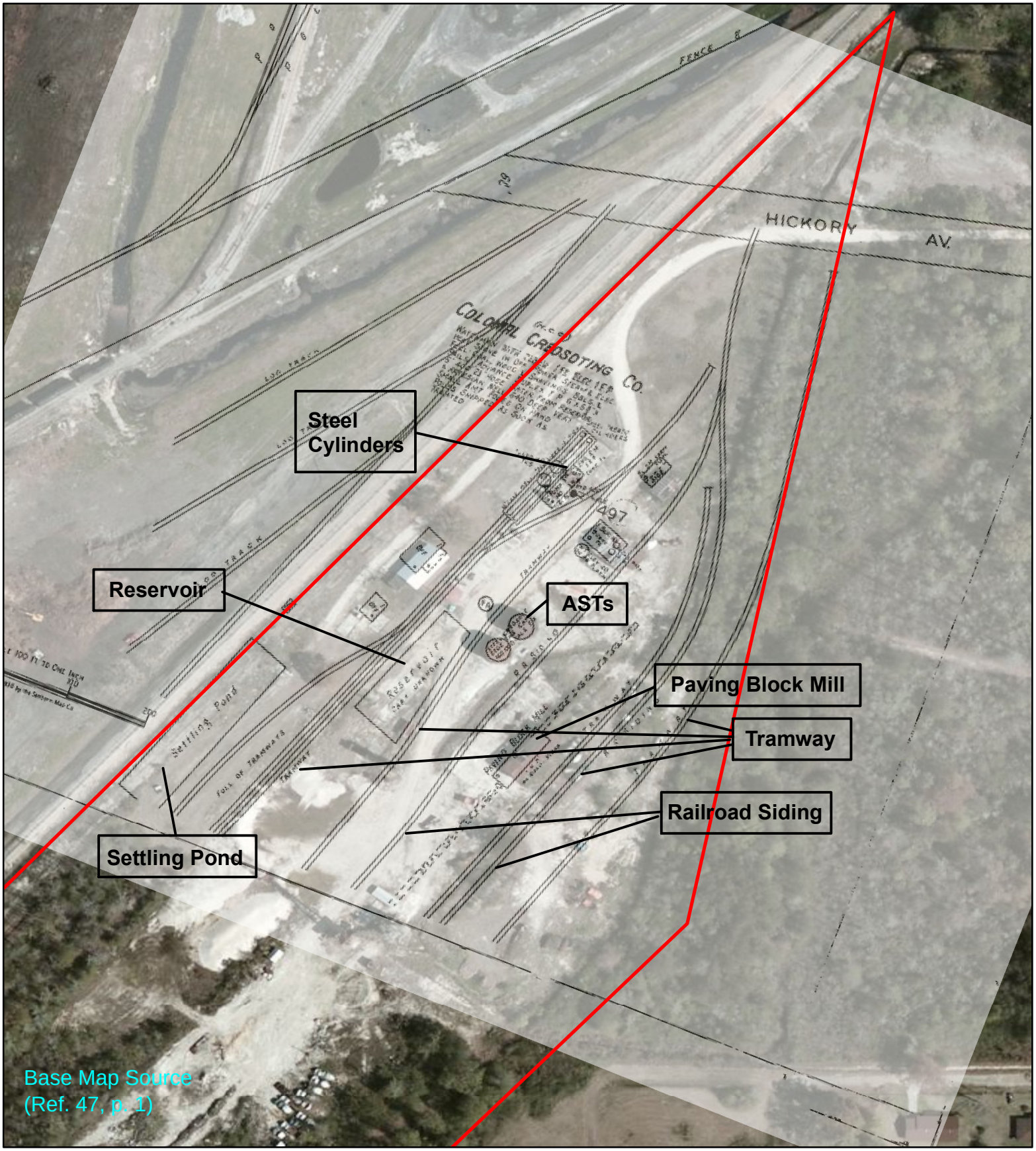

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Figure 3. Historical Sketch
Colonial Creosote
Bogalusa, Washington Parish, Louisiana

Legend

Facility Boundary *

Base Map Source (Ref. 47, p. 1)
* Map Annotated by EPA START-3 Contractor on 12/01/2014 (Ref. 13, p. 4, Ref. 15. p.17)

TDD No. 9/DYNAMAC-077-14-001
CERCLIS No. LAN000607134

0 125 250 500 Feet

1:2,000

N W E S

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Figure 4: Borings/Soil Sample Locations (HRS – May 2014)

Colonial Creosote Bogalusa, Washington Parish, Louisiana

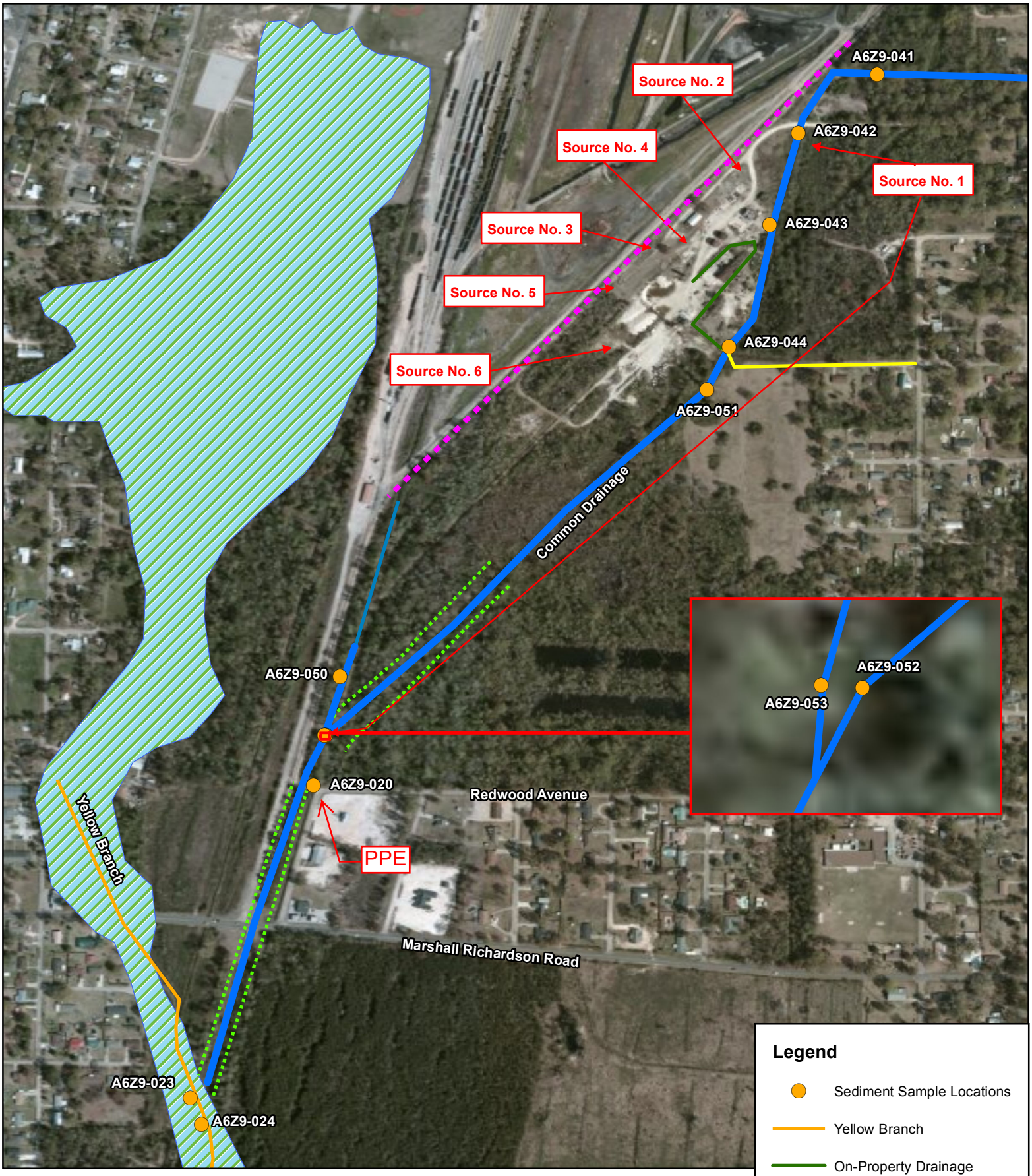
Map* Source (Ref. 14, p.3)
* - Annotated by EPA START-3 Contractor on 02/20/2015 to depict source locations and soil boring sample locations.
Samples collected on May 13-14, 2014. (Ref. 3, pp. 10, 12-13, 15-18, 24, 28, 73-76, 85-86, 89, 146-158).
Facility borders, RR Sidings, Tram Tracks, Creosote ASTs overlaid by Sanborn Maps (Ref. 13. p. 4)

N W E S

0 250 500 1,000 Feet

1:2,500

TDD No. 9/DYNAMAC-077-14-001



Legend

- Sediment Sample Locations
- Yellow Branch
- On-Property Drainage
- Off-Property Drainage
- Common Drainage
- Railroad Siding
- Wetland
- Wetland

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Base Map* Source (Ref. 47, p. 1)

Figure 5: Sediment Sample Locations
Colonial Creosote
Bogalusa, Washington Parish, Louisiana

* - Map annotated by EPA START-3 on 2/15/15 for Sediment Sample Locations, Yellow Branch, PPE, Drainages, (On-Property, Off-Property and Common), RR & Wetland using Topo Maps, Sanborn, START-3 observations/logbooks, wetland delineation maps (Ref.3, pp.82-89; Ref.5, pp.1-4; Ref.13. p.4; Ref.15. p.17; Ref.32, p. 51-54; Ref. 33, p.125-142; Ref.39, pp. 19-22; Ref. 45, pp.1-2; Ref. 47, p. 1).

0 187.5 375 750 1,125 1,500 Feet

1:7,000

TDD # 9/DYNAMAC-077-14-001

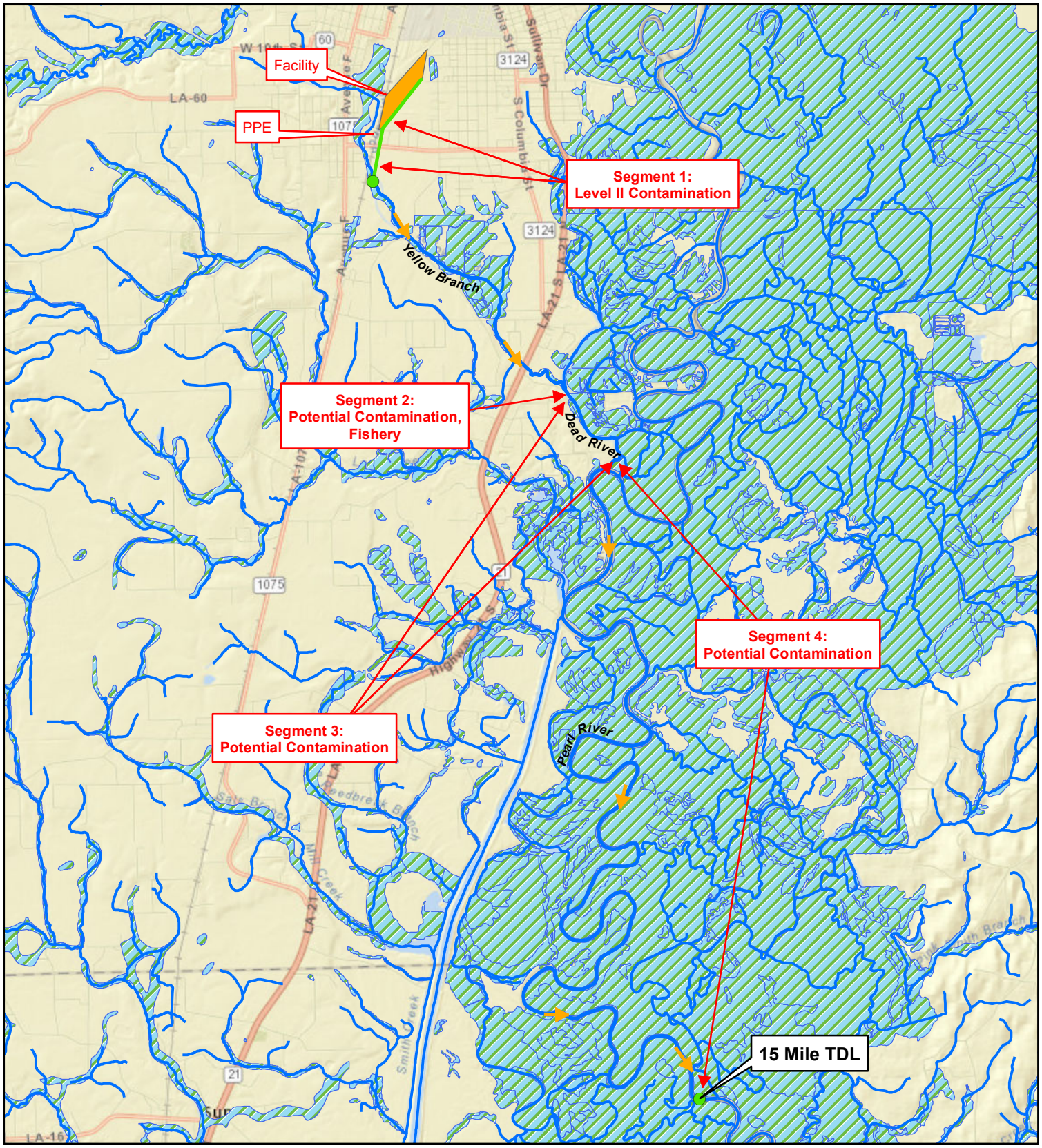

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Figure 6: 15-Mile Surface Water Pathway Map

Colonial Creosote

Bogalusa, Washington Parish, Louisiana

TDD No. 9/DYNAMAC-077-14-001

Base Map*
Source: ESRI Street Map,
National Hydrography Dataset
(Ref. 47, p1)

* - Map annotated by EPA START-3 on 2/15/15 for Surface Water Flow, Common Drainage, Facility Boundary and Wetland using Topo Maps, Sanborn, START-3 observations/logbooks, wetland delineation maps, National Wetlands Inventory (Ref.3, pp.82-89; Ref.5, pp.1-4; Ref.13. p.4; Ref.15. p.17; Ref.32, p. 51-54; Ref. 33, p.125-142; Ref.39, pp. 19-22; Ref. 42, pp. 1-6).

0 0.5 1 2 Miles

1:65,000

N W E S

Legend

- Surface Water Flow
- Common Drainage
- Facility Boundary
- Wetlands

WORKSHEET FOR COMPUTING HRS SITE SCORE

	s	s^2
1. Ground Water Migration Pathway Score (S_{gw})	NS	NS
2a. Surface Water Overland/Flood Migration Component (from Section 4.3 of HRS Documentation Record)	100.00	10,000
2b. Ground Water to Surface Water Migration Component	NS	NS
2c. Surface Water Migration Pathway Score (S_{sw}) Enter the larger of the line 2a and 2b as the pathway score	100.00	10,000
3. Soil Exposure Pathway Score (S_s)	NS	NS
4. Air Migration Pathway Score (S_a)	NS	NS
5. Total of $S_{gw}^2 + S_{sw}^2 + S_s^2 + S_a^2$		10,000
6. HRS Site Score: Divide the line 5 value by 4 and take the square root.		50.00

NS = Not Scored

Surface Water Overland/Flood Migration Component Score Sheet

Factor Categories and Factors		Maximum Value	Value Assigned
DRINKING WATER THREAT			
	Likelihood of Release		
1.	Observed Release	550	550
2.	Potential to Release by Overland Flow:		
	2a. Containment	10	
	2b. Runoff		
	2c. Distance to Surface Water	25	
	2d. Potential to Release by Overland Flow (Lines 2a X [2b+2c])	500	NS
3	Potential to Release by Flood		
	3a. Containment (Flood)	10	
	3b. Flood Frequency	50	
	3c. Potential to Release by Flood (Line 3a X 3b)	500	NS
4.	Potential to Release (Lines 2d + 3c, subject to a maximum of 500)	500	NS
5.	Likelihood to Release (Higher of Lines 1 and 4) NS	550	550
	Waste Characteristics		
6.	Toxicity/Persistence	*	
7.	Hazardous Waste Quantity	*	
8.	Waste Characteristics	100	NS
	Targets		
9.	Nearest Intake	50	NS
10.	Population:		
	10a. Level I Concentrations	**	NS
	10b. Level II Concentrations	**	NS
	10c. Potential Contamination	**	NS
	10d. Population (Lines 10a+10b+10c)	**	NS

Factor Categories and Factors		Maximum Value	Value Assigned
11.	Resources	5	NS
12.	Targets (Lines 9+10d+11)	**	NS
DRINKING WATER THREAT (Concluded)			
	Drinking Water Threat Score		
13.	Drinking Water Threat Score ([Lines 5 x 8 x 12]/82,500, subject to a maximum of 100)	100	NS
HUMAN FOOD CHAIN THREAT			
	Likelihood of Release		
14.	Likelihood of Release (Same value as Line 5)	550	550
	Waste Characteristics		
15.	Toxicity/Persistence/Bioaccumulation	*	$5x10^8$
16.	Hazardous Waste Quantity	*	100
17.	Waste Characteristics	1,000	320
	Targets		
18.	Food Chain Individual	50	20
19.	Population:		
	19a. Level I Concentrations	**	0
	19b. Level II Concentrations	**	0
	19c. Potential Contamination	**	0.00033
	19d. Population (Lines 19a+19b+19c)	**	0.00033
20.	Targets (Value from Lines 18+19d)	**	20.00033
	Human Food Chain Threat Score		
21.	Human Food Chain Threat Score ([Lines 14 x 17 x 20]/82,500, subject to a maximum of 100)	100	42.66
ENVIORNMENTAL THREAT			
	Likelihood of Release		
22.	Likelihood of Release (Same value as Line 5)	550	550
	Waste Characteristics		
23.	Ecosystem Toxicity/Persistence/ Bioaccumulation	*	$5 X 10^8$
24.	Hazardous Waste Quantity	*	100
25.	Waste Characteristics	1,000	320

Factor Categories and Factors	Maximum Value	Value Assigned
Targets		
26. Sensitive Environments:		
26a. Level I Concentrations	**	0
26b. Level II Concentrations	**	25
26c. Potential Contamination	**	2
26d. Sensitive Environments (Lines 26a+26b+26c)	**	27
27. Targets (Value from Line 26d)	**	27
ENVIORNMENTAL THREAT		
28. Environmental Threat Score ([Lines 22 x 25 x 27]/82,500subject to a maximum of 60)	60	57.60
SURFACE WATER OVERLAND/FLOOD MIGRATION COMPONENT SCORE FOR A WATERSHED		
29. WATERSHED SCORE (Lines 13 + 21 + 28, subject to a maximum of 100)	100	100.00
30. Component Score (S0,) (Highest score from Line 29 for all watersheds evaluated, subject to a maximum of 100)	100	100.00

Maximum value applies to waste characteristic category
Maximum value applicable
Do not round to the nearest integer

Reference
Number Description of the Reference

1. U.S. EPA Hazard Ranking System (HRS); Final Rule. Code of Federal Regulations, Title 40, Part 300, Appendix A. Washington, DC: U.S. Government Printing Office, 2000. Title Page only. A complete version of this document is available online at: http://www.epa.gov/superfund/sites/npl/hrsres/index.htm.

2. Superfund Chemical Data Matrix. Appendix B. June 20, 2014. Excerpt Pages: 13. A complete version of SCDM is available at: http://www.epa.gov/superfund/sites/npl/hrsres/tools/scdm.htm.

3. Dynamac Corp. ESI Addendum for Colonial Creosote. October 29, 2014. Total Pages: 347.

4. Using Qualified Data to Document an Observed Release and Observed Contamination. U.S. EPA, Office of Emergency and Remedial Response, Publication 9285.7-14FS. November 1996. Total Pages: 18.

5. U.S.G.S 7.5-minute topographic maps: Bogalusa East, Louisiana, 1997; Bogalusa West, Louisiana, 1982, Henleyfield, Louisiana, 1983 and Sun, Louisiana, 1983. Total Pages: 4.

6. Washington Parish Assessor 2013 Assessment Listing. Parcel # 0440195250. Accessed from http://wpassessor.softwareservices.net/SearchFormLite.aspx. January 8, 2013. Total Pages: 6.

7. LDEQ. Memorandum to Colonial Creosote File from Kyle Moppert, EQS. Re: Telephone conversation with Mr. Jim Henderson. February 4, 1993. Total Pages: 2.

8. LDEQ. Memorandum to Colonial Creosote File from Kyle Moppert, EQS. Re: Conveyance Records Search. April 27, 1993. Total Pages: 15.

9. Lakeview Sand and Gravel Company, Inc. June, 1988. Total Pages: 1.

10. Reference Number reserved.

11. LDEQ. State Site Assessment Phase I. June 4, 1993. Total Pages: 40.

12. LDEQ. Memorandum to Colonial Creosote File from Kyle Moppert, EQS. Re: Site Visit: February 1, 1993. February 3, 1993. Total Pages: 2.

13. Banks Environmental Data. Sanborn Fire Insurance Map Research, April 1915, September 1919, October 1925, May 1930, March 1945. March 21, 2011. Total Pages: 9.

14. Banks Environmental Data. Historical Air Photos, UDSA 1940, USDA 1953, USDA 1959. Total Pages: 3.

15. LDEQ. State Site Assessment – Phase II. March 24, 1994. Total Pages: 140.

16. AECOM. Statement of Clarification. From Brian Early, AECOM. To Noel Biscocho CSS-Dynamac Corporation. Subject: Colonial Creosote Site, Bogalusa (Washington Parish), Louisiana: Hazardous Ranking System Wetland Clarification. January 6, 2015. Total Pages: 2.

17. Louisiana Department of Wildlife and Fisheries. Office of Fisheries, Inland Fisheries Section. Pearl River, Louisiana. Lake History and Management Issues. December 2014. Total Pages: 32.

18. Reference Number Reserved.

19. LDEQ. Potential Hazardous Waste Site Primary Identification and Information. March 4, 1992. Total Pages: 2.

20. Reference Number reserved.

21. Reference Number reserved.

22. Reference Number reserved.

23. Reference Number reserved.

24. Reference Number reserved.

25. Reference Number reserved.

26. Reference Number reserved.

27. Reference Number reserved.

28. Reference Number reserved.

29. Reference Number reserved.

30. Reference Number reserved.

31. Reference Number reserved.

32. Dynamac Corp. Preliminary Assessment Report for Colonial Creosote. August 30, 2011. Total Pages: 81.

33. Dynamac Corp. Site Inspection Report for Colonial Creosote. September 7, 2012. Total Pages: 389.

34. Quality Assurance Sampling Plan for Colonial Creosote, Bogalusa, Washington Parish, Louisiana. April 2, 2014. Total Pages: 47.

35. U.S. EPA Region 6 Laboratory. Final Analytical Report. Project Number 14SF094. July 18, 2014. Total Pages: 182.

36. U.S. Department of Agriculture. Soil Conservation Service. Custom Soil Resource Report for Washington Parish, Louisiana. January 24, 2011. Total Pages: 22.

37. U.S. Department of Health and Human Services, Public Health Service, Agency for Toxic Substance and Disease Registry. Toxicological Profile for Wood Creosote, Coal Tar Creosote, Coal Tar, Coal Tar Pitch, and Coal Tar Pitch Volatiles. September 2002. Total Pages: 394.

38. Dynamac Corp. Record of Communication. Subject: Fishing Consumption at Yellow Branch. December 17, 2014. Total Pages: 1.

39. URS. Wetlands Delineation Report Colonial Creosote Site. December, 2012. Total Pages: 72.

40. US Army Corps of Engineers. Corps of Engineers Wetlands Delineation Manual. January 1987. Total Pages: 143.

41. US Army Corps of Engineers. Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Atlantic and Gulf Coastal Plain Region (Version 2.0). November 2010. Total Pages: 180.

42. U.S. Fish and Wildlife Service. National Wetlands Inventory. Accessed at http://www.fws.gov/wetlands. Accessed January 26, 2011. Total Pages: 6.

43. Dynamac Corp. Record of Communication. Subject: Fish Consumption at Dead River. February 17, 2015. Total Pages: 2.

44. Federal Emergency Management Agency. Flood Insurance Rate Maps, Washington Parish, Louisiana. Accessed at http://msc.fema.gov. Accessed on April 5, 2011. Total Pages: 2.

45. Dynamac Corp. Memorandum to File. Subject: Clarification on Sample Location A6Z9-041. February 19, 2015. Total Pages: 1.

46. United States Geological Survey (USGS). Discharge Data for USGS 02489500 Pearl River near Bogalusa, LA. Accessed at http://waterdata.usgs.gov/nwis/dvstat. Accessed February 23, 2015. Total Pages: 3.

47. Dynamac Corp. Memorandum. From Noel Biscocho, START-3. Subject: Map Source. December 18, 2014. Total Pages: 1.

Site Description and History:

The Colonial Creosote site is located in the southeast portion of Bogalusa, Washington Parish, Louisiana (Figure 1, Ref 5, p. 1). The 32-acre property is bound on the west and northwest by a railroad spur for the Illinois Central Gulf Railroad and undeveloped land to the east and south. Properties surrounding the site are owned by Temple Inland Corp (TIN, Inc.), which operates a paper/pulp mill northwest of the site (Ref. 6, pp. 1, 3). Residential communities are located between 0.2 to 0.5 miles to the east, south and west of the site (Figure 1, Ref 5, p.1). The property is accessed from Hickory Avenue, whose west end abuts the north corner of the property (Figure 1, Figure 2, Ref. 5 p. 1, Ref. 6 p. 1).

Colonial constructed a wood treatment plant at the location in 1911 or 1912 (Ref. 11, p. 2). The plant was associated with the Great Southern Timber Co. facility that was located to the west. Colonial was owned by American Creosote of Louisville, Kentucky, which was owned by the King family. The facility was closed in 1953 and sold in 1957 (Ref. 11, p. 5; Ref. 8, p. 14).

Sanborn maps (Ref. 13, pp. 4-9) and historical aerial photographs (Ref. 14, pp. 1-3) were utilized to assess the former operations at the facility. Figure 3 shows the historical location of structures related to Colonial Creosote. Two aboveground storage tanks (ASTs) were utilized to store creosote used for treatment (Ref 13, p 9). Two steel cylinders, approximately 140 feet in length, were utilized for pressure treatment (Ref 13, p. 9). The cylinders were installed in a concrete floored area with 2'6" walls on all sides (Ref. 13, p. 9). One building at the site was used for the manufacture of wood paving blocks (Ref 13, p. 9). Numerous tramways were used to transport treated and untreated wood between various areas at the site (Ref. 13, p. 6). A reservoir (surface impoundment) for fire water was located between the tanks and the office building (Ref. 13, p. 6). A settling pond was located southwest of the office buildings, northwest of a large concentration of tramways (Ref. 13, p. 6). This area was likely the primary drying location for the treated lumber. A railroad siding entered the property from the south and was used to transport wood to and from the site (Ref. 13, pp. 6, 9). The 1945 Sanborn map also shows railroad tracks entering the site from the north, and historical aerial photos appear to confirm the tracks (Ref. 13, pp. 4-9; Ref. 14, pp. 1-3).

Subsurface soil samples were collected from areas where the former treatment and surface impoundments (fire water pond, settling pond, drying area, etc.) were located (Ref. 3, pp. 15-19; Ref. 13, p. 6). A drainage ditch located on the southeastern boundary of the facility receives surface water runoff from the facility (Figures 3, 4, Ref. 33, pp. 113-116, 119-122). Sediment samples were collected from the drainage ditch (Ref. 3, pp 12-14). Analytical data from the soil and sediment samples showed significant concentrations of polyaromatic hydrocarbons (PAHs) that exceeded the background sample concentrations (Ref. 3, pp. 11-14). Additionally, PAHs were also detected in Yellow Branch and wetland sediment samples located downstream from the facility (Ref. 3, pp. 14-15). Yellow Branch is used as a fishery (Ref. 38, p. 1). The EPA START Expanded Site Inspection (ESI) was conducted in December 2012 (Ref. 3, pp. 357, 367). Due to laboratory issues, an ESI addendum was conducted on May 2014 (Ref. 3, pp. 1, 8-9).

SOURCE DESCRIPTION

2.2 SOURCE CHARACTERIZATION

The sources evaluated at the Colonial Creosote site, for HRS purposes, are:

- Source No. 1: Contaminated Ditch (contaminated soil)
- Source No. 2: Former steel treatment cylinder area (contaminated soil)
- Source No. 3: Former Settling Pond (surface impoundment, buried/backfilled)
- Source No. 4: Firewater Reservoir (surface impoundment, buried/backfilled)
- Source No. 5: Former Tram Tracks/Drying Area (contaminated soil)
- Source No. 6: Lumber Piles (contaminated soil)

2.2.1 Source 1 Identification

The following information corresponds to the first source identified for this documentation record.

Number of the source: Source No. 1

Name and description of the source: Contaminated Ditch (contaminated soil)

A drainage ditch that receives surface runoff and drainage from the facility is located on the southern boundary of the property (Figures 3 and 4). Eight sediment samples (including background) were collected from 8 locations in the common drainage ditch and the south portion of the western ditch from the site to Marshall Richardson Road (Figure 5) (Ref. 3, pp. 3-12, 25, 29, 86-90; Ref. 34, pp. 7-8, 15-16, 21). Samples were analyzed for Target Compound Semivolatiles (SVOCs) by the EPA Houston Laboratory using Method CLP-LM04.2 GC/MS. The contaminated portion of the ditch was measured from location A6Z9-42 to A6Z9-52. The ditch is approximately 2,920 feet.

- location A6Z9-041, sample CC-0200-HRS, background, common ditch approximately 30 feet east of Avenue Q (Ref. 45, p.1),
- location A6Z9-042, sample CC-0201-HRS, common ditch approximately 50 feet south of entry road,
- location A6Z9-043, sample CC-0202-HRS, common ditch approximately 425 feet south of location A6Z9-042,
- location A6Z9-044, sample CC-0203-HRS, common ditch approximately 645 feet south of location A6Z9-043,
- location A6Z9-051, sample CC-0208-HRS, common ditch approximately 200 feet southwest of location A6Z9-044,
- location A6Z9-050, sample CC-0207-HRS, common ditch approximately 1300 feet southwest of location A6Z9-051, Location A6Z9-050 is located from the southern portion of the western ditch,

- location A6Z9-053, sample CC-00210-HRS, drainage ditch approximately 275 feet north of location A6Z9-020, and
- location A6Z9-052, sample CC-0209-HRS, drainage ditch approximately 145 feet southeast of location A6Z9-050.

Concentrations exceeding 3 times background concentrations were present for acenaphthylene, anthracene, benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, benzo(g,h,i)perylene, benzo(k)fluoranthene, chrysene, dibenzo(a,h)anthracene, fluoranthene, fluorene, indeno(1,2,3-cd)pyrene, phenanthrene and pyrene in sample locations A6Z9-042 to A6Z9-044 (Ref. 3, pp. 29-30, 170, 271-279).

In the common drainage location A6Z9-051, the sample contained 2-methylnaphthalene, acenaphthylene, anthracene, benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, benzo(g,h,i)perylene, benzo(k)fluoranthene, chrysene, dibenzo(a,h)anthracene, fluoranthene, fluorene, indeno(1,2,3-cd)pyrene, naphthalene, phenanthrene and pyrene at concentrations greater than three time background (Ref. 3, pp. 29, 280-282).

A background sediment sample, Sample Location A6Z9-041 (Sample No. CC-0200-HRS) was collected north approximately 400 feet upstream from its entry onto the facility property (Figure 5; Ref. 3, pp. 9, 29, 72, 88).

All sediment samples were collected using the same methods and were similar soil types (Ref. 36, pp. 9, 10, 12-16). They were collected during the same sampling event conducted in May 2014 (Ref. 3, pp. 1-12).

Table 1 – Background Ditch Sediment Sample

Table 1			
Sample Number:	CC-0200-HRS		
Sampling Location:	A6Z9-041		
Sample Description	Background Common Ditch		
Units:	µg/Kg		
Parameter	Result	Flag	RL
2-Methylnaphthalene	59.4	U	59.4
Acenaphthylene	59.4	U	59.4
Anthracene	59.4	U	59.4
Benzo (a) anthracene	119	U	119
Benzo (a) pyrene	119	U	119
Benzo (b) fluoranthene	156		119
Benzo (g,h,i) perylene	119	U	119
Benzo (k) fluoranthene	119	U	119
Chrysene	119	U	119
Dibenz (a,h) anthracene	119	U	119
Fluoranthene	72.9		59.4
Fluorene	59.4	U	59.4
Indeno (1,2,3-cd) pyrene	119	U	119
Phenanthrene	78.6		59.4
Pyrene	142		59.4
% Solids	68.67		
Bold = detected above Reporting Limits U = Undetected at Reporting Limit RL = Reporting Limit			
Reference	Ref. 35, pp. 6, 104-106. Ref. 3, pp. 25, 29, 64, 87, 89.		
Chain of Custody	Ref. 35, p. 180		

Table 2 – Contaminated Ditch Samples

Table 2																				
Sample Number:	CC-0201-HRS			CC-0202-HRS			CC-0203-HRS			CC-0207-HRS			CC-0208-HRS			CC-0209-HRS			CC-0210-HRS		
Sampling Location:	A6Z9-042			A6Z9-043			A6Z9-044			A6Z9-050			A6Z9-051			A6Z9-052			A6Z9-053		
Sample Description	Common Ditch, Wetland South			Comon Ditch, Wetland Center			Common Ditch, confluence with on-site drainage ditch			Common Drainage, in wetlands south			Common Drainage, in wetlands south			Common Drainage, in wetlands south			Common Drainage, in wetlands south		
Units:	µg/Kg			µg/Kg			µg/Kg			µg/Kg			µg/Kg			µg/Kg			µg/Kg		
Parameter	Result	Flag	RL	Result	Flag	RL	Result	Flag	RL	Result	Flag	RL	Result	Flag	RL	Result	Flag	RL	Result	Flag	RL
2-Methylnaphthalene	**74.8**		66.5	67.9	U	67.9	107	U	107	115	U	115	88.5	U	88.5	80.3	U	80.3	74.2	U	74.2
Acenaphthylene	**213**		66.5	**314**		67.9	**188**		107	**865**		115	**742**		88.5	**472**		80.3	**287**		74.2
Anthracene	**477**		66.5	**369**		67.9	**169**		107	**668**		115	**885**		88.5	295 (29.5)	J H	80.3	**375**		74.2
Benzo (a) anthracene	**3500**		1330	**2090**		136	**1960**		1920	**4760**		2300	**6940**		1770	**2010**		1610	**1510**		148
Benzo (a) pyrene	**4430**		1330	**4570**		679	**3520**		2130	**11400**		2300	**11400**		1770	**4470**		1610	**2930**		148
Benzo (b) fluoranthene	**5500**		1330	**8380**		679	**5360**		2130	**18200**		2300	**16200**		1770	**7790**		1610	**4920**		1480
Benzo (g,h,i) perylene	**2980**		1330	**2130**		679	**2100**		2020	**4480**		230	**6520**		1770	**1600**		161	**831**		148
Benzo (k) fluoranthene	**3370**		1330	**4360**		679	**2430**		2130	**8380**		2300	**8310**		1770	**3930**		1610	**3150**		1480
Chrysene	**4050**		1330	**3320**		679	**2430**		2130	**7230**		2300	**8400**		1770	**2960**		1610	**2410**		148
Dibenz (a,h) anthracene	**887**		865	**615**		611	**575**		533	**1620**		230	**1850**		1770	**504**		161	306		148
Fluoranthene	**5490**		665	**2200**		67.9	**1730**		107	**3980**		115	**7440**		885	**2330**		803	**1600**		74.2
Fluorene	**100**		66.5	67.9	U	67.9	107	U	107	115	U	115	88.5	U	88.5	80.3	U	80.3	74.2	U	74.2
Indeno (1,2,3-cd) pyrene	**4400**		1330	**3280**		679	**3180**		2130	**11900**		2300	**10300**		1770	**2400**		161	**1300**		148
Phenanthrene	**1550**		66.6	**495**		67.9	181		107	**402**		115	**536**		88.5	269 (26.9)	J H	80.3	**340**		74.2
Pyrene	**5000**		665	**4000**		340	**3700**		1070	**11000**		1150	**12900**		885	**5020**		803	**2570**		74.2
% Solids	61.15			59.6			39.08			35.27			46.98			49.87			55.26		
Bold = detected above Reporting Limits and 3x above background							RL = Reporting Limit			H = Biased high											
U = Undetected at Reporting Limit							J = The identification of the analyte is acceptable; the reported concentration is an estimate.														
Reference	Ref. 35, pp. 6, 107-109. Ref. 3, pp. 13-14, 25, 29, 71, 88, 90, 96, 170, 271-273			Ref. 35, pp. 6, 110-112. Ref. 3, pp. 13-14, 25, 29, 70, 90, 96, 170, 274-276			Ref. 35, pp. 6, 113-115. Ref. 3, pp. 13-14, 25, 29, 69, 88, 96, 170, 277-279			Ref. 35, pp. 6, 116-118. Ref. 3, pp. 13-14, 25, 29, 67, 88, 96, 170, 280-282			Ref. 35, pp. 6, 119-121. Ref. 3, pp. 13-14, 25, 29, 68, 88, 96, 170, 283-285			Ref. 35, pp. 6, 41-43. Ref. 3, pp. 13-14, 25, 29, 66, 87, 94, 170, 205-207			Ref. 35, pp. 6, 44-46. Ref. 3, pp. 13-14, 25, 29, 65, 87, 94, 170, 208-210		
Chain of Custody	Ref. 35, p. 180			Ref. 35, p. 180			Ref. 35, p. 180			Ref. 35, p. 180			Ref. 35, p. 180			Ref. 35, p. 178			Ref. 35, p. 178		
Data QA (Quality Review)																Ref. 35, pp. 1-4; Ref. 4, pp. 8, 14-15					

•Location of the source, with reference to a map of the site:

Source No. 1 receives surface runoff and drainage from the facility and is located on the southern boundary of the property (Figure 3).

•Source Type for HRS evaluation purposes: Contaminated Soil

•Containment

Gas release to air: The air migration pathway was not scored; therefore, gas release to air containment was not evaluated.

Particulate release to air: The air migration pathway was not scored; therefore, particulate containment was not evaluated.

Release to ground water: The ground water pathway was not scored; therefore, ground water containment was not evaluated.

Release via overland migration and/or flood: There is no maintained or engineered cover as it is native soil (Ref. 33, pp. 89-96). A containment factor value of 10 is assigned.

2.2.2 Hazardous Substances Associated with a Source

Because containment for this source is greater than zero, substances associated with this source can migrate via the Surface Water Pathway (Ref. 1, Sec. 4.1.2.1.2.1.1). Creosote constituents present in this source include the following:

2-Methylnaphthalene
Acenaphthylene
Anthracene
Benzo (a) anthracene
Benzo (a) pyrene
Benzo (b) fluoranthene
Benzo (g,h,i) perylene
Benzo (k) fluoranthene
Chrysene
Dibenz (a,h) anthracene
Fluoranthene
Fluorene
Indeno (1,2,3-cd) pyrene
Phenanthrene
Pyrene

2.4.2 Hazardous Waste Quantity

2.4.2.1.1 Hazardous Constituent Quantity

The total Hazardous Constituent Quantity for Source 1 could not be adequately determined according to the HRS requirements; that is, the total mass of all CERCLA hazardous substances in the source and releases from the source is not known and cannot be estimated with reasonable confidence (Ref. 1, pp. 51590-51591, Section 2.4.2.1.1). Insufficient historical and current data (manifests, potentially responsible party [PRP] records, State records, permits, waste concentration data, etc.) are available to adequately calculate the total mass of all CERCLA hazardous substances in the source and the associated releases from the source. Therefore, there is insufficient information to calculate a total or partial Hazardous Constituent Quantity estimate for Source 1 with reasonable confidence.

Hazardous Constituent Quantity Value (S): Not Calculated
Are the data complete for hazardous constituent quantity for this area? No

2.4.2.1.2 Hazardous Wastestream Quantity

The total Hazardous Wastestream Quantity for Source 1 could not be adequately determined according to the HRS requirements; that is, the total mass of all hazardous wastestreams and CERCLA pollutants and contaminants for the source and releases from the source is not known and cannot be estimated with reasonable confidence (Ref. 1, p. 51591, Section 2.4.2.1.2). Insufficient historical and current data (manifests, PRP records, State records, permits, waste concentration data, annual reports, etc.) are available to adequately calculate the total mass of all hazardous wastestreams and CERCLA pollutants and contaminants for the source and the associated releases from the source. Therefore, there is insufficient information to adequately calculate or extrapolate a total or partial Hazardous Wastestream Quantity for Source 1 with reasonable confidence.

Hazardous Wastestream Quantity Value (W): Not Calculated
Are the data complete for hazardous constituent quantity for this area? No.

2.4.2.1.3 Volume

The information available is not sufficient to evaluate Tier C because the depth of contamination is not known throughout the source; therefore, it is not possible to adequately determine a source volume (Tier C) in cubic yards (yd^3) (Ref. 1, Sec. 2.4.2.1.3, p. 51591). As a result, the evaluation of source volume proceeds to the evaluation of Tier D, source area (Ref. 1, Sec. 2.4.2.1.4, p. 51591).

Volume of source (gallons): Not Calculated
Reference(s): Ref. 1, Table 2-5, p. 51591
Volume Assigned Value: 0

2.4.2.1.4 Area

The approximate length of the ditch is 2,920 feet. The approximate width is 3 to 5 feet. The area of Source No. 1 is calculated to be 8,760 square feet (ft^2). For a more conservative area estimate, the area source will be assigned an area hazardous waste quantity value of >0. The value >0 reflects that the area value is known to be greater than 0, but the exact area is unknown.

Area of source (ft^2): unknown, but >0
Area Assigned Value: >0
References: Fig. 4; Ref. 1, Sec. 2.4.2.1.4

2.4.2.1.5 Source Hazardous Waste Quantity Value

Source No. 1, Contaminated Ditch

Measures	Surface Water, Ground Water and Air Pathways	Soil Exposure Pathway (Ref. 1, Sec. 5.2.2.2)
Tier A	NC	NS
Tier B	NC	NS
Tier C	NC	NS
Tier D	>0	NS
Assigned Source Hazardous Waste Quantity Value (Ref. 1, Sec. 2.4.2.1.5)	>0	NS

NS: Not scored
NC: Not Calculated

The highest value assigned to either Tier A, Tier B, Tier C, or Tier D is assigned as the Source No. 1 Hazardous Waste Quantity Value (Ref. 1, Section 2.4.2.1.5). The highest value assigned is Tier D.

Source No. 1 Hazardous Waste Quantity Value: >0

SOURCE DESCRIPTION

2.2 SOURCE CHARACTERIZATION

2.2.1 Source Identification

The following information corresponds to the second source identified for this documentation record.

Number of the source: Source No. 2

Name and description of the source: Former steel treatment cylinder area (contaminated soil)

Source No. 2 consists of an area of contaminated soil as defined by sampling adjacent to where two former steel treatment cylinders were located in a pit. Each cylinder measured 10 feet (ft.) by 140 ft. The cylinders were located in a concrete-bermed area (Ref. 13, pp. 4-9; Ref. 15, p. 3). The pit that was reported to have contained the pressure treatment vessels has been backfilled with sand, soil, and gravel (Ref. 3, p. 76; Ref. 11. pp. 4-5; Ref. 32, pp. 57-58). Immediately west and adjacent to the cylinders was an impoundment (Figure 3, Ref. 13, p.4).

A Geoprobe was used to advance soil borings using push probe technology at two locations in this area (Figure 4). The borings were advanced to a maximum depth of 10 feet below ground surface (bgs) using the procedures in the EPA Environmental Response Team (ERT) Standard Operating Procedure (SOP) 2050, modified for the actual unit used by the driller. Grab soil samples were collected from each boring, at a location of visual contamination or where toxic gas sensor (photoionization detector - PID) readings above background were obtained from a MultiRae gas meter (Ref. 3, p. 3, Appendix F; Ref. 34, pp. 1-15).

Five soil samples were collected from two boring locations in the area on the west side of the former treatment unit:

- location A6Z9-026 samples CC-0226-HRS/CC-0254-HRS (dup) – 4 to 6 ft bgs and CC-0227-HRS – 8 to 10 ft bgs (Ref. 3, pp. 24, 28, 36-37, 76, 85, 89, 148);
- location A6Z9-027 sample CC-0228-HRS – 6 to 8 ft bgs and CC-0229-HRS – 8 to 10 ft bgs (Ref. 3, pp. 24, 28 36-37, 85, 89, 149).

In the area adjacent to and west of the former treatment cylinders, twenty-two PAHs were detected at concentrations greater than the reporting limit (RLs) and in concentrations greater than three times background concentrations from the same sample interval (Ref. 35, pp. 6-7, 77-79, 80-82, 83-88, 89-91, 179).

Location of the source, with reference to a map of the site:

Source No. 2 is located in the former process area in the northern portion of the property (Figs. 2 and 3). Samples were taken west of the concrete pit/treatment cylinders of the treatment areas because of the sand and gravel operations and parking surface that has been added since the wood treatment facility was in operation. Both the impoundment and concrete pit area have been filled in (Ref. 15, pp. 1, 2).

Source Type for HRS evaluation purposes: (contaminated soil)

Containment

Gas release to air: The air migration pathway was not scored; therefore, gas release to air containment was not evaluated.

Particulate release to air: The air migration pathway was not scored; therefore, particulate containment was not evaluated.

Release to ground water: The ground water pathway was not scored; therefore, ground water containment was not evaluated.

Release via overland migration and/or flood: There is no evidence of an engineered or maintained cover for the source (Ref. 3, pp. 76, 148-149). The source receives a containment factor value of 10 (Ref. 1, Table 4-2).

2.2.2 Hazardous Substances Associated with a Source

The substances associated with this source include PAHs. The samples contained concentrations of hazardous substances equal to or greater than their corresponding RLs and were significantly greater than the background levels (concentrations were at least three times greater than the background levels (Table 3 and Table 4).

Background levels were established from samples collected outside the area of historical operations. The highest concentration of each substance was selected to identify the established background level (Table 3). All samples were analyzed for Target Compound Semivolatiles (SVOCs) by the EPA Houston Laboratory using Method CLP-LM04.2 GC/MS.

The samples designated as background samples were collected from the same medium as the characterization samples (i.e., soil) using similar sample collection methods (Ref. 3, pp. 1-13). The background sample was collected northeast and north of Source No. 1 where no designated operations were known to have taken place. All soil samples were collected from the same sample intervals (Ref. 13, Appendix F). The Soil Survey for Washington Parish, Louisiana was reviewed to determine the similarity of soil types within the area of concern (Ref. 36, pp. 1-8).

Table 3 – Background Soil Samples

Table 3																							
Sample Number:	CC-0233-HRS			CC-0234-HRS			CC-0235-HRS			CC-0236-HRS			CC-0237-HRS			CC-0238-HRS			CC-0239-HRS			CC-0240-HRS		
Sampling Location:	A6Z9-060			A6Z9-060			A6Z9-060			A6Z9-060			A6Z9-060			A6Z9-060			A6Z9-060			A6Z9-060		
Sample Description	0-2 ft depth			2 to 4 ft depth			4-6 ft depth			6-8 ft depth			8-10 ft depth			10-12 ft depth			12-14 ft depth			14-16 ft depth		
Units:	µg/Kg			µg/Kg			µg/Kg			µg/Kg			µg/Kg			µg/Kg			µg/Kg			µg/Kg		
Parameter	Result	Flag	RL	Result	Flag	RL	Result	Flag	RL	Result	Flag	RL	Result	Flag	RL	Result	Flag	RL	Result	Flag	RL	Result	Flag	RL
1,1'-Biphenyl	185	U	185	196	U	196	191	U	191	188	U	188	248	U	248	193	U	193	204	U	204	202	U	202
2-Methylnaphthalene	674		46.1	48.9	U	48.9	47.8	U	47.8	47	U	47	61.9	U	61.9	48.3	U	48.3	51	U	51	50.4	U	50.4
Acenaphthene	1400		46.1	48.9	U	48.9	47.8	U	47.8	47	U	47	61.9	U	61.9	48.3	U	48.3	51	U	51	50.4	U	50.4
Acenaphthylene	743		46.1	48.9	U	48.9	47.8	U	47.8	47	U	47	61.9	U	61.9	48.3	U	48.3	51	U	51	50.4	U	50.4
Anthracene	4550		461	142		48.9	47.8	U	47.8	**61.2**		47	61.9	U	61.9	48.3	U	48.3	51	U	51	50.4	U	50.4
Benzo (a) anthracene	26200		9230	97.8	U	97.8	95.5	U	95.5	93.9	U	93.9	124	U	124	96.6	U	96.6	102	U	102	101	U	101
Benzo (a) pyrene	27900		9230	97.8	U	97.8	95.5	U	95.5	93.9	U	93.9	124	U	124	96.6	U	96.6	102	U	102	101	U	101
Benzo (b) fluoranthene	31400		9230	97.8	U	97.8	95.5	U	95.5	93.9	U	93.9	124	U	124	96.6	U	96.6	102	U	102	101	U	101
Benzo (g,h,i) perylene	9610		923	97.8	U	97.8	95.5	U	95.5	93.9	U	93.9	124	U	124	96.6	U	96.6	102	U	102	101	U	101
Benzo (k) fluoranthene	23800		9230	97.8	U	97.8	95.5	U	95.5	93.9	U	93.9	124	U	124	96.6	U	96.6	102	U	102	101	U	101
Chrysene	28900		9230	97.8	U	97.8	95.5	U	95.5	93.9	U	93.9	124	U	124	96.6	U	96.6	102	U	102	101	U	101
Dibenz (a,h) anthracene	3470		923	97.8	U	97.8	95.5	U	95.5	93.9	U	93.9	124	U	124	96.6	U	96.6	102	U	102	101	U	101
Dibenzofuran	928		185	196	U	196	191	U	191	188	U	188	248	U	248	193	U	193	204	U	204	202	U	202
Fluoranthene	49100		4610	160		48.9	47.8	U	47.8	47	U	47	61.9	U	61.9	48.3	U	48.3	51	U	51	50.4	U	50.4
Fluorene	1770		46.1	48.9	U	48.9	47.8	U	47.8	47	U	47	61.9	U	61.9	48.3	U	48.3	51	U	51	50.4	U	50.4
Indeno (1,2,3-cd) pyrene	16100		923	97.8	U	97.8	95.5	U	95.5	93.9	U	93.9	124	U	124	96.6	U	96.6	102	U	102	101	U	101
Naphthalene	621		46.1	48.9	U	48.9	47.8	U	47.8	47	U	47	61.9	U	61.9	48.3	U	48.3	51	U	51	50.4	U	50.4
Nitrobenzene	185	U	185	196	U	196	191	U	191	188	U	188	248	U	248	193	U	193	204	U	204	202	U	202
Pentachlorophenol	92.3	U	9.3	97.8	U	97.8	95.5	U	95.5	93.9	U	93.9	124	U	124	96.6	U	96.6	102	U	102	101	U	101
Phenanthrene	25600		4610	208		48.9	47.8	U	47.8	**62.3**		47	61.9	U	61.9	48.3	U	48.3	51	U	51	50.4	U	50.4
Phenol	185	U	185	196	U	196	191	U	191	188	U	188	248	U	248	193	U	193	204	U	204	202	U	202
Pyrene	41400		4610	183	J	48.9	47.8	U	47.8	47	U	47	61.9	U	61.9	48.3	U	48.3	51	U	51	50.4	U	50.4
% Solids	89.27			83.83			86.43			88.3			67.21			83.84			81.17			81.29		
U = Undetected at Reporting Limit J = The identification of the analyte is acceptable; the reported concentration is an estimate.																							
Reference	Ref. 35, pp. 7, 128-130. Ref. 3, pp. 12-13, 24, 28, 89-90, 96, 146, 171, 292-294			Ref. 35, pp. 7, 131-133. Ref. 3, pp. 12-13, 24, 28, 89-90, 96, 146, 171, 295-297			Ref. 35, pp. 7, 134-136. Ref. 3, pp. 12-13, 24, 28, 89-90, 96, 146, 171, 298-300			Ref. 35, pp. 7, 137-139. Ref. 3, pp. 12-13, 24, 28, 89-90, 96, 146, 171, 301-303			Ref. 35, pp. 7, 140-142. Ref. 3, pp. 12-13, 24, 28, 89-90, 96, 146, 171, 304-306			Ref. 35, pp. 7, 143-145. Ref. 3, pp. 12-13, 24, 28, 89-90, 96, 146, 171, 307-309			Ref. 35, pp. 7, 146-148. Ref. 3, pp. 12-13, 24, 28, 89-90, 96, 146, 171, 310-312			Ref. 35, pp. 7, 149-151. Ref. 3, pp. 12-13, 24, 28, 89-90, 96, 146, 171, 313-315		
Chain of Custody	Ref. 35, p. 180			Ref. 35, p. 180			Ref. 35, p. 180			Ref. 35, p. 180			Ref. 35, p. 180			Ref. 35, p. 180			Ref. 35, p. 180			Ref. 35, p. 180		

EVIDENCE TABLE:

Table 4 represents the soil samples collected from the west side of the former treatment unit. These soil samples were compared to the highest concentration of PAHs from the background samples collected. The samples were analyzed for PAHs.

Table 4 – Source Characterization Soil Samples

Table 4															
Sample Number:	CC-0226-HRS			CC-0227-HRS			CC-0228-HRS			CC-0229-HRS			CC-0254-HRS (duplicate)		
Sampling Location:	A6Z9-026			A6Z9-026			A6Z9-027			A6Z9-027			A6Z9-026		
Sample Description:	Treatment Area: 4-6 ft			Treatment Area: 8-10 ft			Treatment Area: 6-8 ft			Treatment Area: 8-10 ft			Treatment Area: 4-6 ft		
Units:	µg/Kg			µg/Kg			µg/Kg			µg/Kg			µg/Kg		
Parameter	Result	Flag	RL	Result	Flag	RL	Result	Flag	RL	Result	Flag	RL	Result	Flag	RL
1,1'-Biphenyl	**855,000**		468,000	**96,000**		23,600	**3,220,000**		1120000	**209,000**		22,100	**1,110,000**		465,000
2,4-Dimethylphenol	78,600 (7,800)	J H	23,400	**15,300**		14,200	115,000 (11,500)	NJ	112000	**44,000**		22,100	241,000 (24,100)	J H	232,000
2-Methylnaphthalene	**4,630,000**		1,170,000	**557,000**		59,000	**18,100,000**		2800000	**1,100,000**		55,200	**8,030,000**		1,160,000
Acenaphthene	**2,690,000**		117,000	**319,000**		59,000	**10,100,000**		280000	**775,000**		55,200	**3,360,000**		116,000
Acenaphthylene	**144,000**		5,850	**18,600**		590	**558,000**		28,000	**41,800**		5,520	**175,000**		5,810
Anthracene	**4,050,000**		117,000	**417,000**		59,000	**10,500,000**		280000	**424,000**		55,200	**1,620,000**		116,000
Benzo (a) anthracene	**684,000**		234,000	**84,300**		11,800	**2,960,000**		559000	**223,000**		110,000	**858,000**		232,000
Benzo (a) pyrene	**246,000**		23,400	**30,700**		11,800	**949,000**		559000	**87,300**		11,000	**349,000**		23,200
Benzo (b) fluoranthene	**301,000**		23,400	**34,500**		11,800	**1,220,000**		559000	**108,000**		11,000	**393,000**		23,200
Benzo (g,h,i) perylene	**28,800**		11,700	**6,150**		5,900	225,000 (22,500)	J H	225000	11,000	U	11,000	**77,100**		23,200
Benzo (k) fluoranthene	**221,000**		23,400	**33,900**		11,800	**877,000**		559000	**110,000**		11,000	**289,000**		23,200
Chrysene	**577,000**		234,000	**69,600**		11,800	**2,410,000**		559000	**218,000**		110,000	**687,000**		232,000
Dibenz (a,h) anthracene	**14,000**		11,700	**2,470**		2,360	102,000 (10,200)	J H	55900	11,000	U	11,000	**29,800**		23,200
Dibenzofuran	**2,400,000**		468,000	**273,000**		236,000	**9,080,000**		1120000	**655,000**		221,000	**2,760,000**		465,000
Fluoranthene	**3,600,000**		117,000	**471,000**		59,000	**14,800,000**		2800000	**1,060,000**		55,200	**3,830,000**		116,000
Fluorene	**3,180,000**		117,000	**368,000**		59,000	**11,100,000**		280000	**810,000**		55,200	**3,380,000**		116,000
Indeno (1,2,3-cd) pyrene	**56,100**		11,700	**11,000**		10,600	430,000 (43,000)	J H	55900	**19,000**		11,000	**154,000**		23,200
Naphthalene	**32,200,000**		1,170,000	**2,090,000**		59,000	**111,000,000**		2800000	**3,000,000**		552,000	**292,000,000**		11,600,000
Phenanthrene	**7,530,000**		1,170,000	**826,000**		59,000	**31,900,000**		2800000	**1,930,000**		55,200	**8,840,000**		1,160,000
Pyrene	**1,940,000**		117,000	**285,000**		59,000	**7,670,000**		280000	**696,000**		55,200	**2,300,000**		116,000
% Solids	84.56			84.53			35.48			88.83			84.58		

Bold = detected above Reporting Limits and 3x background
U = Undetected at Reporting Limit
RL = Reporting Limit
H = Biased high
J = The identification of the analyte is acceptable; the reported concentration is an estimate.
NJ = There is presumptive evidence that the analyte is present; the analyte is reported as a tentative identification. The reported value is an estimate.

Reference	Ref. 35, pp.6, 77-79; Ref. 3, pp. 15, 24, 28, 76, 85, 89, 148, 170, 241-243	Ref. 35, pp.6, 80-82; Ref. 3, pp. 15, 24, 28, 76, 85, 89, 148, 170, 244-246	Ref. 35, pp.6, 83-85; Ref. 3, pp. 15, 24, 28, 76, 85, 89, 149, 170, 247-252	Ref. 35, pp.6, 89-91; Ref. 3, pp. 15, 24, 28, 76, 85, 89, 149, 170, 253-255	Ref. 35, pp. 6, 101-103; Ref. 3, pp. 15, 24, 28, 76, 85, 89, 148
Chain of Custody	Ref. 35, p. 179	Ref. 35, p. 179	Ref. 35, p. 179	Ref. 35, p. 179	Ref. 35, p. 179
Data QA (Quality Review)	Ref. 35, pp. 1-4; Ref. 4, p. 13		Ref. 35, pp. 1-4; Ref. 4, p. 13-15		Ref. 35, pp. 1-4; Ref. 4, p. 13

2.2.3 Hazardous Substances Available to a Pathway

Because containment for this source is greater than zero, the following substances associated with the source can migrate via the Surface Water Pathway (Ref. 1, Sec. 4.1.2.1.2.1.1):

1,1'-Biphenyl
2,4-Dimethylphenol
2-Methylnaphthalene
Acenaphthene
Acenaphthylene
Anthracene
Benzo (a) anthracene
Benzo (a) pyrene
Benzo (b) fluoranthene
Benzo (g,h,i) perylene
Benzo (k) fluoranthene
Carbazole
Chrysene
Dibenz (a,h) anthracene
Dibenzofuran
Fluoranthene
Fluorene
Indeno (1,2,3-cd) pyrene
Naphthalene
Phenanthrene
Pyrene

2.4.2.1.1 Hazardous Constituent Quantity

The total Hazardous Constituent Quantity for Source 2 could not be adequately determined according to the HRS requirements; that is, the total mass of all CERCLA hazardous substances in the source and releases from the source is not known and cannot be estimated with reasonable confidence (Ref. 1, pp. 51590-51591, Section 2.4.2.1.1). Insufficient historical and current data (manifests, potentially responsible party [PRP] records, State records, permits, waste concentration data, etc.) are available to adequately calculate the total mass of all CERCLA hazardous substances in the source and the associated releases from the source. Therefore, there is insufficient information to calculate a total or partial Hazardous Constituent Quantity estimate for Source 2 with reasonable confidence.

Hazardous Constituent Quantity Value (S): Not Calculated
Are the data complete for hazardous constituent quantity for this area? No

2.4.2.1.2 Hazardous Wastestream Quantity

The total Hazardous Wastestream Quantity for Source 2 could not be adequately determined according to the HRS requirements; that is, the total mass of all hazardous wastestreams and CERCLA pollutants and contaminants for the source and releases from the source is not known and cannot be estimated with reasonable confidence (Ref. 1, p. 51591, Section 2.4.2.1.2). Insufficient historical and current data (manifests, PRP records, State records, permits, waste concentration data, annual reports, etc.) are available to adequately calculate the total mass of all hazardous wastestreams and CERCLA pollutants and contaminants for the source and the associated releases from the source. Therefore, there is insufficient information to adequately calculate or extrapolate a total or partial Hazardous Wastestream Quantity for Source 2 with reasonable confidence.

Hazardous Wastestream Quantity Value (W): Not Calculated
Are the data complete for hazardous constituent quantity for this area? No

2.4.2.1.3 Volume

The information available is not sufficient to evaluate Tier C because the depth of contamination is not known throughout the source; therefore, it is not possible to adequately determine a source volume (Tier C) in cubic yards (yd^3) Ref. 1, Sec. 2.4.2.1.3, p. 51591). As a result, the evaluation of source volume proceeds to the evaluation of Tier D, source area (Ref. 1, Sec. 2.4.2.1.4, p. 51591).

Dimension of source (yd^3 or gallons): Not Calculated
Volume Assigned Value: 0
Are the data complete for volume quantity for this area? No

2.4.2.1.4 Area

Each cylinder measured 10 feet (ft.) by 140 ft. The cylinders were located in a concrete-bermed area (Ref. 13, pp. 4-9). The pit that was reported to have contained the pressure treatment vessels has been backfilled with sand, soil, and gravel. The area of contaminated soil is unknown, but greater than 0. Using Table 2-5, the area assigned equation is >0.

Area of source (ft^2): >0
Area Assigned Value: >0
References: Fig. 2; Fig. 3; Ref. 1, Sec. 2.4.2.1.4

2.4.2.1.5 Source Hazardous Waste Quantity Value

Measures	Surface Water, Ground Water and Air Pathways	Soil Exposure Pathway (Ref. 1, Sec. 5.2.2.2)
Tier A	NC	NS
Tier B	NC	NS
Tier C	NC	NS
Tier D	>0	NS
Assigned Source Hazardous Waste Quantity Value (Ref. 1, Sec. 2.4.2.1.5)	>0	NS

NC = Not calculated
NS = Not scored

The highest value assigned to either Tier A, Tier B, Tier C, or Tier D is assigned as the Source No. 2 Hazardous Waste Quantity Value (Ref. 1, Section 2.4.2.1.5). The highest value assigned is Tier D.

Source No. 2 Hazardous Waste Quantity Value: >0

2.2 SOURCE CHARACTERIZATION

2.2.1 Source Identification

The following information corresponds to the third source identified for this documentation record.

Number of the source: Source No. 3

Name and description of the source: Former Settling Pond (surface impoundment)

Source No. 3 is southwest of the treatment unit (Figure 3).

The Sanborn maps illustrate a Settling Pond that was located on the northwestern side of the property in 1925, 1930 and 1945 (Ref. 13, pp. 4-9). The historical aerial photographs also illustrate the pond in 1940, 1953 and 1959 (Ref. 14, pp. 1-3).

A Geoprobe was used to advance soil borings using push probe technology at two locations within the settling pond area (Figure 4). The borings were advanced to a maximum depth of 16 feet below ground surface (bgs) using the procedures in the EPA Environmental Response Team (ERT) Standard Operating Procedure (SOP) 2050, modified for the actual unit used by the driller. Grab soil samples were collected from each boring, at a location of visual contamination or where toxic gas sensor (photoionization detector - PID) readings above background were obtained from a MultiRae gas meter (Ref. 3, p. 3, Appendix F).

Former Settling Pond: Four soil samples were collected from 2 boring locations in the area of the former settling pond (Figure 4) (Ref. 34, pp. 6-7, 16, 20):

- location A6Z9-031 samples CC-0215-HRS – 4 to 6 ft bgs, CC-0216-HRS – 8 to 10 ft bgs (Ref. 3, pp. 24, 28, 38-39, 85, 89, 152);
- location A6Z9-032 samples CC-0211-HRS– 10 to 11 ft bgs, CC-0212_HRS 14 to 16 ft bgs (Ref. 3, pp. 24, 28, 38-39, 85, 89,153).

Samples were analyzed for Target Compound Semivolatiles (SVOCs) by the EPA Houston Laboratory using Method CLP-LM04.2 GC/MS (Ref. 35, pp. 6, 20-31, 178).

The hazardous substances associated with this source are polynuclear aromatic hydrocarbons (PAHs).

In the settling pond, PAHs were detected at concentrations greater than three times their concentration in the background samples.

The background sample was collected from a soil boring location (Location: A6Z9-060; Sample Numbers: CC-0233- HRS; CC-0234-HRS; CC-0235-HRS; CC-0236-HRS; CC-0237-HRS; CC-0238-HRS; CC-0239-HRS, and CC-0240-HRS) from an undisturbed section of the property, located in the extreme northeast portion of the property, north of the entrance road.

Soil samples at this location were collected from the following depth intervals respective to the area listing above: 0 - 2 feet below ground surface (bgs); 2 - 4 feet bgs; 4 - 6 feet bgs; 6 - 8 feet bgs; 8 - 10 feet bgs; 10 - 12 feet bgs; 12 - 14 feet bgs, and 14 - 16 feet bgs (Figure 4).

Location of the source, with reference to a map of the site:

Source No. 3 is located in the former process area south of the treatment unit (Fig. 3).

Source Type for HRS evaluation purposes: Surface Impoundment

Containment

Gas release to air: The air migration pathway was not scored; therefore, gas release to air containment was not evaluated.

Particulate release to air: The air migration pathway was not scored; therefore, particulate containment was not evaluated.

Release to ground water: The ground water pathway was not scored; therefore, ground water containment was not evaluated.

Release via overland migration and/or flood: Field observations and soil boring logs s from within the source demonstrate that there is no maintained engineered cover or a functioning and maintained run- on control system and runoff management system (Ref. 3, pp. 152-153; Ref. 33, pp. 104, 106). A surface water containment factor value of 10 is assigned from Table 4-2 (Ref. 1, p. 51610).

2.2.2 Hazardous Substances Associated with a Source

The substances listed in Table 6 were present in the unlined settling pond. The samples contained concentrations of hazardous substances equal to or greater than their corresponding RLs and were at least three times greater than the background levels (Table 5).

Background levels were established from samples collected outside the area of historical operations. The highest concentration of each substance was selected to identify the established background level (Table 3). All samples were analyzed for Target Compound Semivolatiles (SVOCs) by the EPA Houston Laboratory using Method CLP-LM04.2 GC/MS.

The samples designated as background samples were collected from the same medium as the characterization samples (i.e., soil) using similar sample collection methods (Ref. 3, pp. 1-13). The background sample was collected northeast and north of Source No. 1 where no designated operations were known to have taken place. All soil samples were collected from the same sample intervals (Ref. 3, Appendix F). The Soil Survey for Washington Parish, Louisiana was reviewed to determine the similarity of soil types within the area of concern (Ref. 36, pp. 1-8).

Table 5 – Background Soil Samples

Table 5																							
Sample Number:	CC-0233-HRS			CC-0234-HRS			CC-0235-HRS			CC-0236-HRS			CC-0237-HRS			CC-0238-HRS			CC-0239-HRS			CC-0240-HRS		
Sampling Location:	A6Z9-060			A6Z9-060			A6Z9-060			A6Z9-060			A6Z9-060			A6Z9-060			A6Z9-060			A6Z9-060		
Sample Description	0-2 ft depth			2 to 4 ft depth			4-6 ft depth			6-8 ft depth			8-10 ft depth			10-12 ft depth			12-14 ft depth			14-16 ft depth		
Units:	µg/Kg			µg/Kg			µg/Kg			µg/Kg			µg/Kg			µg/Kg			µg/Kg			µg/Kg		
Parameter	Result	Flag	RL	Result	Flag	RL	Result	Flag	RL	Result	Flag	RL	Result	Flag	RL	Result	Flag	RL	Result	Flag	RL	Result	Flag	RL
1,1'-Biphenyl	185	U	185	196	U	196	191	U	191	188	U	188	248	U	248	193	U	193	204	U	204	202	U	202
2-Methylnaphthalene	674		46.1	48.9	U	48.9	47.8	U	47.8	47	U	47	61.9	U	61.9	48.3	U	48.3	51	U	51	50.4	U	50.4
Acenaphthene	1400		46.1	48.9	U	48.9	47.8	U	47.8	47	U	47	61.9	U	61.9	48.3	U	48.3	51	U	51	50.4	U	50.4
Acenaphthylene	743		46.1	48.9	U	48.9	47.8	U	47.8	47	U	47	61.9	U	61.9	48.3	U	48.3	51	U	51	50.4	U	50.4
Anthracene	4550		461	142		48.9	47.8	U	47.8	**61.2**		47	61.9	U	61.9	48.3	U	48.3	51	U	51	50.4	U	50.4
Benzo (a) anthracene	26200		9230	97.8	U	97.8	95.5	U	95.5	93.9	U	93.9	124	U	124	96.6	U	96.6	102	U	102	101	U	101
Benzo (a) pyrene	27900		9230	97.8	U	97.8	95.5	U	95.5	93.9	U	93.9	124	U	124	96.6	U	96.6	102	U	102	101	U	101
Benzo (b) fluoranthene	31400		9230	97.8	U	97.8	95.5	U	95.5	93.9	U	93.9	124	U	124	96.6	U	96.6	102	U	102	101	U	101
Benzo (g,h,i) perylene	9610		923	97.8	U	97.8	95.5	U	95.5	93.9	U	93.9	124	U	124	96.6	U	96.6	102	U	102	101	U	101
Benzo (k) fluoranthene	23800		9230	97.8	U	97.8	95.5	U	95.5	93.9	U	93.9	124	U	124	96.6	U	96.6	102	U	102	101	U	101
Chrysene	28900		9230	97.8	U	97.8	95.5	U	95.5	93.9	U	93.9	124	U	124	96.6	U	96.6	102	U	102	101	U	101
Dibenz (a,h) anthracene	3470		923	97.8	U	97.8	95.5	U	95.5	93.9	U	93.9	124	U	124	96.6	U	96.6	102	U	102	101	U	101
Dibenzofuran	928		185	196	U	196	191	U	191	188	U	188	248	U	248	193	U	193	204	U	204	202	U	202
Fluoranthene	49100		4610	160		48.9	47.8	U	47.8	47	U	47	61.9	U	61.9	48.3	U	48.3	51	U	51	50.4	U	50.4
Fluorene	1770		46.1	48.9	U	48.9	47.8	U	47.8	47	U	47	61.9	U	61.9	48.3	U	48.3	51	U	51	50.4	U	50.4
Indeno (1,2,3-cd) pyrene	16100		923	97.8	U	97.8	95.5	U	95.5	93.9	U	93.9	124	U	124	96.6	U	96.6	102	U	102	101	U	101
Naphthalene	621		46.1	48.9	U	48.9	47.8	U	47.8	47	U	47	61.9	U	61.9	48.3	U	48.3	51	U	51	50.4	U	50.4
Nitrobenzene	185	U	185	196	U	196	191	U	191	188	U	188	248	U	248	193	U	193	204	U	204	202	U	202
Pentachlorophenol	92.3	U	9.3	97.8	U	97.8	95.5	U	95.5	93.9	U	93.9	124	U	124	96.6	U	96.6	102	U	102	101	U	101
Phenanthrene	25600		4610	208		48.9	47.8	U	47.8	**62.3**		47	61.9	U	61.9	48.3	U	48.3	51	U	51	50.4	U	50.4
Phenol	185	U	185	196	U	196	191	U	191	188	U	188	248	U	248	193	U	193	204	U	204	202	U	202
Pyrene	41400		4610	183	J	48.9	47.8	U	47.8	47	U	47	61.9	U	61.9	48.3	U	48.3	51	U	51	50.4	U	50.4
% Solids	89.27			83.83			86.43			88.3			67.21			83.84			81.17			81.29		
U = Undetected at Reporting Limit J = The identification of the analyte is acceptable; the reported concentration is an estimate.																							
Reference	Ref. 35, pp. 7, 128-130. Ref. 3, pp. 12-13, 24, 28, 89-90, 96, 146, 171, 292-294			Ref. 35, pp. 7, 131-133. Ref. 3, pp. 12-13, 24, 28, 89-90, 96, 146, 171, 295-297			Ref. 35, pp. 7, 134-136. Ref. 3, pp. 12-13, 24, 28, 89-90, 96, 146, 171, 298-300			Ref. 35, pp. 7, 137-139. Ref. 3, pp. 12-13, 24, 28, 89-90, 96, 146, 171, 301-303			Ref. 35, pp. 7, 140-142. Ref. 3, pp. 12-13, 24, 28, 89-90, 96, 146, 171, 304-306			Ref. 35, pp. 7, 143-145. Ref. 3, pp. 12-13, 24, 28, 89-90, 96, 146, 171, 307-309			Ref. 35, pp. 7, 146-148. Ref. 3, pp. 12-13, 24, 28, 89-90, 96, 146, 171, 310-312			Ref. 35, pp. 7, 149-151. Ref. 3, pp. 12-13, 24, 28, 89-90, 96, 146, 171, 313-315		
Chain of Custody	Ref. 35, p. 180			Ref. 35, p. 180			Ref. 35, p. 180			Ref. 35, p. 180			Ref. 35, p. 180			Ref. 35, p. 180			Ref. 35, p. 180			Ref. 35, p. 180		

Table 6 – Source Characterization Soil Samples

Table 6												
Sample Number:	CC-0215-HRS			CC-0216-HRS			CC-0211-HRS			CC-0212-HRS		
Sampling Location:	A6Z9-031			A6Z9-031			A6Z9-032			A6Z9-032		
Sample Description:	Settling pond North 4-6 ft			Settling pond North 8-10 ft			Settling pond South 10-11 ft			Settling pond South 14-16 ft		
Units:	µg/Kg			µg/Kg			µg/Kg			µg/Kg		
Parameter	Result	Flag	RL	Result	Flag	RL	Result	Flag	RL	Result	Flag	RL
1,1'-Biphenyl	**97,500**		13,600	**21,300**		4,840	**13,600**		4,580	**5,250**		3,960
2-Methylnaphthalene	**606,000**		34,100	**110,000**		12,100	**58,700**		11,400	**19,900**		991
Acenaphthene	**498,000**		34,100	**102,000**		12,100	**56,200**		11,400	**22,200**		991
Acenaphthylene	**13,800**		3,410	**4,110**		121	**1,780**		114	**790**		99
Anthracene	**267,000**		34,100	**37,300**		1,210	**36,200**		1,140	**12,600**		991
Benzo (a) anthracene	**179,000**		68,200	**36,900**		2,420	**19,300**		2,290	**9,550**		1,980
Benzo (a) pyrene	**75,900**		6,820	**16,400**		2,420	**7,460**		2,290	**3,630**		1,980
Benzo (b) fluoranthene	**91,000**		6,820	**21,100**		2,420	**9,980**		2,290	**4,940**		1,980
Benzo (g,h,i) perylene	**16,700**		6,820	**4,490**		2,420	**1,000**		229	**516**		198
Benzo (k) fluoranthene	**73,200**		6,820	**14,600**		2,420	**7,300**		2,290	**3,510**		1,980
Chrysene	**146,000**		68,200	**29,000**		2,420	**24,500**		2,290	**7,690**		1,980
Dibenz (a,h) anthracene	**7,730**		6,820	1,480 (148)	J H	242	**485**		229	251		198
Dibenzofuran	**417,000**		136,000	**85,000**		48,400	**54,400**		45,800	**23,100**		3,960
Fluoranthene	**834,000**		34,100	**174,000**		12,100	**93,700**		11,400	**52,100**		9,910
Fluorene	**542,000**		34,100	**113,000**		12,100	**68,000**		11,400	**31,000**		991
Indeno (1,2,3-cd) pyrene	**31,300**		6,820	**6,900**		2,420	**1,940**		229	**993**		198
Naphthalene	**1,330,000**		34,100	**297,000**		12,100	**191,000**		11,400	**46,300**		9,910
Phenanthrene	**1,260,000**		34,100	**285,000**		12,100	**188,000**		11,400	**97,500**		9,910

Pyrene	**546,000**		34,100	**98,500**		12,100	**64,700**		11,400	**24,200**		991
% Solids	69.75			68.42			86.2			81.8		

Bold = detected above Reporting Limits and 3X above background
U = Undetected at Reporting Limit
RL = Reporting Limit H = Biased high
J = The identification of the analyte is acceptable; the reported concentration is an estimate.

Reference	Ref. 35, pp. 6, 20-22. Ref. 3, pp. 16, 24, 28, 85, 94, 152, 170, 184-186	Ref. 35, pp. 6, 23-25. Ref. 3, pp. 16, 24, 28, 85, 94, 152, 170, 187-189	Ref. 35, pp. 6, 26-28. Ref. 3, pp. 16, 24, 28, 85, 94, 153, 170, 190-192	Ref. 35, pp. 6, 29-31. Ref. 3, pp. 16, 24, 28, 85, 94, 153, 170, 193-195
Chain of Custody	Ref. 35, p. 178	Ref. 35, p. 178	Ref. 35, p. 178	Ref. 35, p. 178
Data QA (Quality Review)		Ref. 35, pp. 1-4; Ref. 4, pp. 8, 14		

2.2.3 Hazardous Substances Available to a Pathway

Because containment for this source is greater than zero, the following substances associated with the source can migrate via the Surface Water Pathway (Ref. 1, Sec. 4.1.2.1.2.1.1):

1,1'-Biphenyl
2,4-Dimethylphenol
2-Methylnaphthalene
Acenaphthene
Acenaphthylene
Anthracene
Benzo (a) anthracene
Benzo (a) pyrene
Benzo (b) fluoranthene
Benzo (g,h,i) perylene
Benzo (k) fluoranthene
Carbazole
Chrysene
Dibenz (a,h) anthracene
Dibenzofuran
Fluoranthene
Fluorene
Indeno (1,2,3-cd) pyrene
Naphthalene
Phenanthrene
Pyrene

2.4.2.1.1 Hazardous Constituent Quantity

The total Hazardous Constituent Quantity for Source 3 could not be adequately determined according to the HRS requirements; that is, the total mass of all CERCLA hazardous substances in the source and releases from the source is not known and cannot be estimated with reasonable confidence (Ref. 1, pp. 51590-51591, Section 2.4.2.1.1). Insufficient historical and current data (manifests, potentially responsible party [PRP] records, State records, permits, waste concentration data, etc.) are available to adequately calculate the total mass of all CERCLA hazardous substances in the source and the associated releases from the source. Therefore, there is insufficient information to calculate a total or partial Hazardous Constituent Quantity estimate for Source 3 with reasonable confidence.

Hazardous Constituent Quantity Value (S): Not Calculated
Are the data complete for hazardous constituent quantity for this area? No

2.4.2.1.2 Hazardous Wastestream Quantity

The total Hazardous Wastestream Quantity for Source 3 could not be adequately determined according to the HRS requirements; that is, the total mass of all hazardous wastestreams and CERCLA pollutants and contaminants for the source and releases from the source is not known and cannot be estimated with reasonable confidence (Ref. 1, p. 51591, Section 2.4.2.1.2). Insufficient historical and current data (manifests, PRP records, State records, permits, waste concentration data, annual reports, etc.) are available to adequately calculate the total mass of all hazardous wastestreams and CERCLA pollutants and contaminants for the source and the associated releases from the source. Therefore, there is insufficient information to adequately calculate or extrapolate a total or partial Hazardous Wastestream Quantity for Source 3 with reasonable confidence.

Hazardous Wastestream Quantity Value (W): Not Calculated
Are the data complete for hazardous constituent quantity for this area? No

2.4.2.1.3 Volume

The depth of contamination throughout the source in not known; therefore, volume of the area cannot be adequately determined. Scoring will proceed to an evaluation of area according to the HRS (Ref. 1, Sec. 2.4.2.1.3).

Dimension of source (yd^3 or gallons): NC
Reference(s): 1, Sec. 2.4.2.1.3
Volume Assigned Value: 0

2.4.2.1.4 Area

The Sanborn maps and historical aerial photographs were used to estimate the size of the settling pond (Ref. 13, p. 4). Based on the scale of the 1930 Sanborn map (Ref. 13, p. 6), the settling pond dimensions were approximately 200 by 50 feet for a total area of 10,000 square feet. Borings installed in the settling pond had a non-native surface and an inconsistent lithology, with intermittent areas of staining, odor and Photoionizer Detector (PID) readings indicative of contamination. Three of the four borings were advanced deep enough to encounter clean native clay that was consistent with the background boring placed north of the site (Ref. 3, pp. 3 -6).

The estimated area of the settling pond is 10,000 ft^2 (Ref. 1, Sec. 2.4.2.1.4). The area assigned value for Source No. 3 (buried/backfilled) is 769.23 (HRS, Table 2-5).

Area of source (ft^2): 10,000
Area Assigned Value: 769.23
References: Ref. 1, Sec. 2.4.2.1.4

2.4.2.1.5 Source Hazardous Waste Quantity Value

Measures	Surface Water, Ground Water and Air Pathways	Soil Exposure Pathway (Ref. 1, Sec. 5.2.2.2)
Tier A	NC	NS
Tier B	NC	NS
Tier C	NC	NS
Tier D	769.23	NS
Assigned Source Hazardous Waste Quantity Value (Ref. 1, Sec. 2.4.2.1.5)	769.23	NS

NC = Not calculated
NS = Not scored

The highest value assigned to either Tier A, Tier B, Tier C, or Tier D is assigned as the Source No. 3 Hazardous Waste Quantity Value (Ref. 1, Section 2.4.2.1.5). The highest value assigned is Tier D.

Source No. 3 Hazardous Waste Quantity Value: 769.23

2.2 SOURCE CHARACTERIZATION

2.2.1 Source Identification

The following information corresponds to the fourth source identified for this documentation record.

Number of the source: Source No. 4

Name and description of the source: Firewater Reservoir (surface impoundment, buried/backfilled)

Source No. 4 is west of the treatment unit (Figure 3).

The Sanborn maps illustrate a "reservoir" that was located southwest of the treatment cylinders in 1915, 1925, 1930 and 1945 (Ref. 13, pp. 4-9). The historical aerial photographs also illustrate the pond in 1940, 1953 and 1959 (Ref. 14, pp. 1-3).

A Geoprobe was used to advance soil borings using push probe technology at three locations in the firewater reservoir area (Figure 4). The borings were advanced to a maximum depth of 16 feet below ground surface (bgs) using the procedures in the EPA Environmental Response Team (ERT) Standard Operating Procedure (SOP) 2050, modified for the actual unit used by the driller. Grab soil samples were collected from each boring, at a location of visual contamination or where toxic gas sensor (photoionization detector - PID) readings above background were obtained from a MultiRae gas meter (Ref. 3, p. 3, Appendix F).

Firewater Reservoir: Four soil samples were collected from three boring locations in the area of the former firewater reservoir (Figure 4) (Ref. 34, pp. 6-7, 16, 20):

- location A6Z9-029 sample CC-0217-HRS – North 3 to 5 ft bgs. This sample was collected between the area north of the lumber piles and south of the reservoir (Ref. 3, pp. 24, 28, 42-45, 85, 89, 150).
- location A6Z9-030 samples CC-0224-HRS– South 2 to 4 ft bgs, and CC-0225-HRS – South 4 to 6 ft. bgs (Ref. 3, pp. 24, 28, 42-43, 85, 89, 151); and
- location A6Z9-049 samples CC-0221-HRS – 6 to 8 ft bgs, and CC-0222-HRS – 8 to 10 ft bgs (Ref. 3, pp. 16-17, 24, 28, 42-45, 85, 88-89, 95, 151, 158).

In the former firewater reservoir, semi-volatiles were detected at concentrations greater than three times background concentrations (Table 7; Ref. 35, pp. 6, 50-52, 68-76, 179). The hazardous substances associated with this source are polynuclear aromatic hydrocarbons (PAHs).

Location of the source, with reference to a map of the site:

Source No. 4 is located in the former process area north of the treatment unit (Fig. 3).

Source Type for HRS evaluation purposes: Surface impoundment

Containment

Gas release to air: The air migration pathway was not scored; therefore, gas release to air containment was not evaluated.

Particulate release to air: The air migration pathway was not scored; therefore, particulate containment was not evaluated.

Release to ground water: The ground water pathway was not scored; therefore, the ground water containment was not evaluated.

Release via overland migration and/or flood: There is no documentation or evidence to indicate that the source was lined (Ref. 3, pp. 75, 151, 158; Ref. 33, p. 107).

2.2.2 Hazardous Substances Associated with a Source

The substances listed in Table 8 were present in the unlined settling pond. The samples contained concentrations of hazardous substances equal to or greater than their corresponding RLs.

Background levels were established from samples collected outside the area of historical operations. The highest concentration of each substance was selected to identify the established background level (Table 7). All samples were analyzed for Target Compound Semivolatiles (SVOCs) by the EPA Houston Laboratory using Method CLP-LM04.2 GC/MS.

The samples designated as background samples were collected from the same medium as the characterization samples (i.e., soil) using similar sample collection methods (Ref. 3, pp. 1-13). The background sample was collected northeast and north of Source No. 1 where no designated operations were known to have taken place. All soil samples were collected from the same sample intervals (Ref. 3, Appendix F). The Soil Survey for Washington Parish, Louisiana was reviewed to determine the similarity of soil types within the area of concern (Ref. 36, pp. 1-8).

Table 7 – Background Soil Samples

Table 7																							
Sample Number:	CC-0233-HRS			CC-0234-HRS			CC-0235-HRS			CC-0236-HRS			CC-0237-HRS			CC-0238-HRS			CC-0239-HRS			CC-0240-HRS		
Sampling Location:	A6Z9-060			A6Z9-060			A6Z9-060			A6Z9-060			A6Z9-060			A6Z9-060			A6Z9-060			A6Z9-060		
Sample Description	0-2 ft depth			2 to 4 ft depth			4-6 ft depth			6-8 ft depth			8-10 ft depth			10-12 ft depth			12-14 ft depth			14-16 ft depth		
Units:	µg/Kg			µg/Kg			µg/Kg			µg/Kg			µg/Kg			µg/Kg			µg/Kg			µg/Kg		
Parameter	Result	Flag	RL	Result	Flag	RL	Result	Flag	RL	Result	Flag	RL	Result	Flag	RL	Result	Flag	RL	Result	Flag	RL	Result	Flag	RL
1,1'-Biphenyl	185	U	185	196	U	196	191	U	191	188	U	188	248	U	248	193	U	193	204	U	204	202	U	202
2-Methylnaphthalene	674		46.1	48.9	U	48.9	47.8	U	47.8	47	U	47	61.9	U	61.9	48.3	U	48.3	51	U	51	50.4	U	50.4
Acenaphthene	1400		46.1	48.9	U	48.9	47.8	U	47.8	47	U	47	61.9	U	61.9	48.3	U	48.3	51	U	51	50.4	U	50.4
Acenaphthylene	743		46.1	48.9	U	48.9	47.8	U	47.8	47	U	47	61.9	U	61.9	48.3	U	48.3	51	U	51	50.4	U	50.4
Anthracene	4550		461	142		48.9	47.8	U	47.8	**61.2**		47	61.9	U	61.9	48.3	U	48.3	51	U	51	50.4	U	50.4
Benzo (a) anthracene	26200		9230	97.8	U	97.8	95.5	U	95.5	93.9	U	93.9	124	U	124	96.6	U	96.6	102	U	102	101	U	101
Benzo (a) pyrene	27900		9230	97.8	U	97.8	95.5	U	95.5	93.9	U	93.9	124	U	124	96.6	U	96.6	102	U	102	101	U	101
Benzo (b) fluoranthene	31400		9230	97.8	U	97.8	95.5	U	95.5	93.9	U	93.9	124	U	124	96.6	U	96.6	102	U	102	101	U	101
Benzo (g,h,i) perylene	9610		923	97.8	U	97.8	95.5	U	95.5	93.9	U	93.9	124	U	124	96.6	U	96.6	102	U	102	101	U	101
Benzo (k) fluoranthene	23800		9230	97.8	U	97.8	95.5	U	95.5	93.9	U	93.9	124	U	124	96.6	U	96.6	102	U	102	101	U	101
Chrysene	28900		9230	97.8	U	97.8	95.5	U	95.5	93.9	U	93.9	124	U	124	96.6	U	96.6	102	U	102	101	U	101
Dibenz (a,h) anthracene	3470		923	97.8	U	97.8	95.5	U	95.5	93.9	U	93.9	124	U	124	96.6	U	96.6	102	U	102	101	U	101
Dibenzofuran	928		185	196	U	196	191	U	191	188	U	188	248	U	248	193	U	193	204	U	204	202	U	202
Fluoranthene	49100		4610	160		48.9	47.8	U	47.8	47	U	47	61.9	U	61.9	48.3	U	48.3	51	U	51	50.4	U	50.4
Fluorene	1770		46.1	48.9	U	48.9	47.8	U	47.8	47	U	47	61.9	U	61.9	48.3	U	48.3	51	U	51	50.4	U	50.4
Indeno (1,2,3-cd) pyrene	16100		923	97.8	U	97.8	95.5	U	95.5	93.9	U	93.9	124	U	124	96.6	U	96.6	102	U	102	101	U	101
Naphthalene	621		46.1	48.9	U	48.9	47.8	U	47.8	47	U	47	61.9	U	61.9	48.3	U	48.3	51	U	51	50.4	U	50.4
Nitrobenzene	185	U	185	196	U	196	191	U	191	188	U	188	248	U	248	193	U	193	204	U	204	202	U	202
Pentachlorophenol	92.3	U	9.3	97.8	U	97.8	95.5	U	95.5	93.9	U	93.9	124	U	124	96.6	U	96.6	102	U	102	101	U	101
Phenanthrene	25600		4610	208		48.9	47.8	U	47.8	**62.3**		47	61.9	U	61.9	48.3	U	48.3	51	U	51	50.4	U	50.4
Phenol	185	U	185	196	U	196	191	U	191	188	U	188	248	U	248	193	U	193	204	U	204	202	U	202
Pyrene	41400		4610	183	J	48.9	47.8	U	47.8	47	U	47	61.9	U	61.9	48.3	U	48.3	51	U	51	50.4	U	50.4
% Solids	89.27			83.83			86.43			88.3			67.21			83.84			81.17			81.29		
U = Undetected at Reporting Limit J = The identification of the analyte is acceptable; the reported concentration is an estimate.																							
Reference	Ref. 35, pp. 7, 128-130. Ref. 3, pp. 12-13, 24, 28, 89-90, 96, 146, 171, 292-294			Ref. 35, pp. 7, 131-133. Ref. 3, pp. 12-13, 24, 28, 89-90, 96, 146, 171, 295-297			Ref. 35, pp. 7, 134-136. Ref. 3, pp. 12-13, 24, 28, 89-90, 96, 146, 171, 298-300			Ref. 35, pp. 7, 137-139. Ref. 3, pp. 12-13, 24, 28, 89-90, 96, 146, 171, 301-303			Ref. 35, pp. 7, 140-142. Ref. 3, pp. 12-13, 24, 28, 89-90, 96, 146, 171, 304-306			Ref. 35, pp. 7, 143-145. Ref. 3, pp. 12-13, 24, 28, 89-90, 96, 146, 171, 307-309			Ref. 35, pp. 7, 146-148. Ref. 3, pp. 12-13, 24, 28, 89-90, 96, 146, 171, 310-312			Ref. 35, pp. 7, 149-151. Ref. 3, pp. 12-13, 24, 28, 89-90, 96, 146, 171, 313-315		
Chain of Custody	Ref. 35, p. 180			Ref. 35, p. 180			Ref. 35, p. 180			Ref. 35, p. 180			Ref. 35, p. 180			Ref. 35, p. 180			Ref. 35, p. 180			Ref. 35, p. 180		

Table 8 – Source Characterization Soil Samples

Table 8												
Sample Number:	CC-0224-HRS			CC-0225-HRS			CC-0222-HRS			CC-0221-HRS		
Sampling Location:	A6Z9-030			A6Z9-030			A6Z9-049			A6Z9-049		
Sample Description	Firewater Reservoir South 2-4 ft.			Firewater Reservoir South 4-6 ft			Firewater Reservoir North 8-10 ft			Reservoir North 6-8 ft		
Units:	µg/Kg			µg/Kg			µg/Kg			µg/Kg		
Parameter	Result	Flag	RL	Result	Flag	RL	Result	Flag	RL	Result	Flag	RL
2-Methylnaphthalene	**86.5**		43.9	46.1	U	46.1	**135**		47.1	**31100**		1030
Acenaphthene	**51.1**		43.9	46.1	U	46.1	**112**		47.1	**23000**		1030
Acenaphthylene	**180**		43.9	46.1	U	46.1	47.1	U	47.1	**1030**		585
Anthracene	**475**		43.9	46.1	U	46.1	**97.9**		47.1	**17400**		1030
Benzo (a) anthracene	**1650**		87.9	92.2	U	92.2	94.3	U	94.3	**10700**		2060
Benzo (a) pyrene	**3240**		879	92.2	U	92.2	94.3	U	94.3	**6180**		2060
Benzo (b) fluoranthene	**6300**		879	92.2	U	92.2	94.3	U	94.3	**7240**		2060
Benzo (k) fluoranthene	**2960**		879	92.2	U	92.2	94.3	U	94.3	**6300**		2060
Chrysene	**2890**		879	92.2	U	92.2	94.3	U	94.3	**10200**		2060
Dibenzofuran	176	U	176	184	U	184	**467**		189	**19700**		4120
Fluoranthene	**2500**		439	46.1	U	46.1	**229**		47.1	**37300**		1030
Fluorene	**80.9**		43.9	46.1	U	46.1	**351**		47.1	**25500**		1030
Indeno (1,2,3-cd) pyrene	**3260**		879	92.2	U	92.2	94.3	U	94.3	**3260**		2060
Naphthalene	**249**		43.9	**51.8**		46.1	**393**		47.1	**74800**		10300
Phenanthrene	**725**		43.9	46.1	U	46.1	**1240**		47.1	**70300**		10300
Pyrene	**2360**		439	46.1	U	46.1	**139**		47.1	**20300**		1030
% Solids	93.24			88.34			85.47			71.03		

Bold = detected above Reporting Limits and 3X above background

U = Undetected at Reporting Limit
RL = Reporting Limit
J = The identification of the analyte is acceptable; the reported concentration is an estimate.

Reference	Ref. 35, pp.6, 71-73. Ref. 3, pp. 16-17, 24, 28, 85, 95, 151, 235-237	Ref. 35, pp.6, 74-76. Ref. 3, pp. 16-17, 24, 28, 85, 88-89, 95, 151, 238-240	Ref. 35, pp.6, 68-70. Ref. 3, pp. 16-17, 24, 28, 85, 88-89, 95, 158, 232-234	Ref. 35, pp.6, 65-67. Ref. 3, pp. 16-17, 24, 28, 85, 88-89, 95, 158, 226-231
Chain of Custody	Ref. 35, p. 179	Ref. 35, p. 179	Ref. 35, p. 179	Ref. 35, p. 179

2.2.3 Hazardous Substances Available to a Pathway

Because containment for this source is greater than zero, the following substances associated with the source can migrate via the Surface Water Pathway (Ref. 1, Sec. 4.1.2.1.2.1.1):

2-Methylnaphthalene
Acenaphthene
Acenaphthylene
Anthracene
Benzo (a) anthracene
Benzo (a) pyrene
Benzo (b) fluoranthene
Benzo (k) fluoranthene
Carbazole
Chrysene
Dibenzofuran
Fluoranthene
Fluorene
Indeno (1,2,3-cd) pyrene
Naphthalene
Phenanthrene
Pyrene

2.4.2.1.1 Hazardous Constituent Quantity

The total Hazardous Constituent Quantity for Source 4 could not be adequately determined according to the HRS requirements; that is, the total mass of all CERCLA hazardous substances in the source and releases from the source is not known and cannot be estimated with reasonable confidence (Ref. 1, pp. 51590-51591, Section 2.4.2.1.1). Insufficient historical and current data (manifests, potentially responsible party [PRP] records, State records, permits, waste concentration data, etc.) are available to adequately calculate the total mass of all CERCLA hazardous substances in the source and the associated releases from the source. Therefore, there is insufficient information to calculate a total or partial Hazardous Constituent Quantity estimate for Source 4 with reasonable confidence.

Hazardous Constituent Quantity Value (S): Not Calculated
Are the data complete for hazardous constituent quantity for this area? No

2.4.2.1.2 Hazardous Wastestream Quantity

The total Hazardous Wastestream Quantity for Source 4 could not be adequately determined according to the HRS requirements; that is, the total mass of all hazardous wastestreams and CERCLA pollutants and contaminants for the source and releases from the source is not known and cannot be estimated with reasonable confidence (Ref. 1, p. 51591, Section 2.4.2.1.2). Insufficient historical and current data (manifests, PRP records, State records, permits, waste concentration data, annual reports, etc.) are available to adequately calculate the total mass of all hazardous wastestreams and CERCLA pollutants and contaminants for the source and the associated releases from the source. Therefore, there is insufficient information to adequately calculate or extrapolate a total or partial Hazardous Wastestream Quantity for Source 4 with reasonable confidence.

Hazardous Wastestream Quantity Value (W): Not Calculated
Are the data complete for hazardous constituent quantity for this area? No

2.4.2.1.3 Volume

The depth of contamination throughout the source in not known; therefore, volume of the area cannot be adequately determined. Scoring will proceed to an evaluation of area according to the HRS (Ref. 1, Sec. 2.4.2.1.3).

Dimension of source (yd^3 or gallons): NC
Reference(s): 1, Sec. 2.4.2.1.3
Volume Assigned Value: 0

2.4.2.1.4 Area

Using the scale provided on the 1915 Sanborn maps (Ref. 13, p. 9), the firewater reservoir is estimated to have had dimensions of 160 by 50 feet for a total area of 8,000 square feet. The area assigned value for this source is 615.38 (8,000 divided by 13) (Ref. 1, Sec. 2.4.2.1.3, p. 51591).

Area of source (ft^2): 8,000
Area Assigned Value: 615.38
References: Ref. 1, Sec. 2.4.2.1.4

2.4.2.1.5 Source Hazardous Waste Quantity Value

Measures	Surface Water, Ground Water and Air Pathways	Soil Exposure Pathway (Ref. 1, Sec. 5.2.2.2)
Tier A	NC	NS
Tier B	NC	NS
Tier C	NC	NS
Tier D	615.38	NS
Assigned Source Hazardous Waste Quantity Value (Ref. 1, Sec. 2.4.2.1.5)	615.38	NS

NC = Not calculated
NS = Not scored

The highest value assigned to either Tier A, Tier B, Tier C, or Tier D is assigned as the Source No. 4 Hazardous Waste Quantity Value (Ref. 1, Section 2.4.2.1.5). The highest value assigned is Tier D.

Source No. 3 Hazardous Waste Quantity Value: 615.38

2.2 SOURCE CHARACTERIZATION

2.2.1 Source Identification

The following information corresponds to the fifth source identified for this documentation record.

Number of the source: Source No. 5

Name and description of the source: Former Tram Tracks/Drying Area (contaminated soil)

The Sanborn maps illustrate the former Tram Tracks/Drying Area that was located north of Source No. 4 and south of Source No. 3 (Ref. 13, pp. 4-9). The historical aerial photographs also show the Tram Tracks/Drying Area in use from 1940 (Ref. 14, pp. 1-5). A Geoprobe was used to advance soil borings using push probe technology at two locations in this area (Figure 4). The borings were advanced to a maximum depth of 9 feet below ground surface (bgs) using the procedures in the EPA Environmental Response Team (ERT) Standard Operating Procedure (SOP) 2050, modified for the actual unit used by the driller. Grab soil samples were collected from each boring, at a location of visual contamination or where toxic gas sensor (photoionization detector - PID) readings above background were obtained from a MultiRae gas meter (Ref. 3, p. 3, Appendix F).

Former Tram Tracks/Drying Area: Three soil samples were collected from 2 boring locations in the area identified as the former tram tracks/drying area (Figure 4) (Ref. 3, Appendix F; Ref. 34, pp. 6-7, 16, 20):

- location A6Z9-034 samples CC-0219-HRS – North 8 to 9 ft bgs, and CC-0220-HRS – North 10 to 12 ft bgs (Ref. 3, pp. 24, 28, 40-41, 85, 89, 154); and
- location A6Z9-035, samples CC-0213-HRS – South 4 to 6 ft bgs. (Ref. 3, pp. 24, 28, 40-41, 85, 89, 155).

Samples were analyzed for Target Compound Semivolatiles (SVOCs) by the EPA Houston Laboratory using Method CLP-LM04.2 GC/MS (Ref. 35, pp. 6, 35-37, 56-61, 178-179).

The hazardous substances associated with this source are polynuclear aromatic hydrocarbons (PAHs).

Former Tram Tracks/Drying Area: In the drying area, PAHs were detected at concentrations greater than three times background concentrations (Tables 9 and Table 10).

Location of the source, with reference to a map of the site:

Source No. 5 is located in between the settling ponds and the firewater reservoir (Fig. 4).

Source Type for HRS evaluation purposes: Contaminated Soil

Containment

Gas release to air: The air migration pathway was not scored; therefore, gas release to air containment was not evaluated.

Particulate release to air: The air migration pathway was not scored; therefore, particulate containment was not evaluated.

Release to ground water: The ground water pathway was not scored; therefore, ground water containment was not evaluated.

Release via overland migration and/or flood: Based on the analytical data and observations of the soil borings during installation, there is no documentation or evidence to indicate that the source was lined (Ref. 3, pp. 154-155; Ref. 33, pp. 103, 105).

2.2.2 Hazardous Substances Associated with a Source

The substances listed in Table 10 were present in the Former Tram Tracks/Drying Area. The samples contained concentrations of hazardous substances equal to or greater than their corresponding SQLs.

Background levels were established from samples collected outside the area of historical operations. The highest concentration of each substance was selected to identify the established background level (Table 9). All samples were analyzed for Target Compound Semivolatiles (SVOCs) by the EPA Houston Laboratory using Method CLP-LM04.2 GC/MS.

The samples designated as background samples were collected from the same medium as the characterization samples (i.e., soil) using similar sample collection methods (Ref. 3, pp. 1-13). The background sample was collected northeast and north of Source No. 1 where no designated operations were known to have taken place. All soil samples were collected from the same sample intervals (Ref. 33, Appendix F). The Soil Survey for Washington Parish, Louisiana was reviewed to determine the similarity of soil types within the area of concern (Ref. 36, pp. 1-8).

Table 9 – Background Soil Samples

Table 9																							
Sample Number:	CC-0233-HRS			CC-0234-HRS			CC-0235-HRS			CC-0236-HRS			CC-0237-HRS			CC-0238-HRS			CC-0239-HRS			CC-0240-HRS		
Sampling Location:	A6Z9-060			A6Z9-060			A6Z9-060			A6Z9-060			A6Z9-060			A6Z9-060			A6Z9-060			A6Z9-060		
Sample Description	0-2 ft depth			2 to 4 ft depth			4-6 ft depth			6-8 ft depth			8-10 ft depth			10-12 ft depth			12-14 ft depth			14-16 ft depth		
Units:	µg/Kg			µg/Kg			µg/Kg			µg/Kg			µg/Kg			µg/Kg			µg/Kg			µg/Kg		
Parameter	Result	Flag	RL	Result	Flag	RL	Result	Flag	RL	Result	Flag	RL	Result	Flag	RL	Result	Flag	RL	Result	Flag	RL	Result	Flag	RL
1,1'-Biphenyl	185	U	185	196	U	196	191	U	191	188	U	188	248	U	248	193	U	193	204	U	204	202	U	202
2-Methylnaphthalene	674		46.1	48.9	U	48.9	47.8	U	47.8	47	U	47	61.9	U	61.9	48.3	U	48.3	51	U	51	50.4	U	50.4
Acenaphthene	1400		46.1	48.9	U	48.9	47.8	U	47.8	47	U	47	61.9	U	61.9	48.3	U	48.3	51	U	51	50.4	U	50.4
Acenaphthylene	743		46.1	48.9	U	48.9	47.8	U	47.8	47	U	47	61.9	U	61.9	48.3	U	48.3	51	U	51	50.4	U	50.4
Anthracene	4550		461	142		48.9	47.8	U	47.8	**61.2**		47	61.9	U	61.9	48.3	U	48.3	51	U	51	50.4	U	50.4
Benzo (a) anthracene	26200		9230	97.8	U	97.8	95.5	U	95.5	93.9	U	93.9	124	U	124	96.6	U	96.6	102	U	102	101	U	101
Benzo (a) pyrene	27900		9230	97.8	U	97.8	95.5	U	95.5	93.9	U	93.9	124	U	124	96.6	U	96.6	102	U	102	101	U	101
Benzo (b) fluoranthene	31400		9230	97.8	U	97.8	95.5	U	95.5	93.9	U	93.9	124	U	124	96.6	U	96.6	102	U	102	101	U	101
Benzo (g,h,i) perylene	9610		923	97.8	U	97.8	95.5	U	95.5	93.9	U	93.9	124	U	124	96.6	U	96.6	102	U	102	101	U	101
Benzo (k) fluoranthene	23800		9230	97.8	U	97.8	95.5	U	95.5	93.9	U	93.9	124	U	124	96.6	U	96.6	102	U	102	101	U	101
Chrysene	28900		9230	97.8	U	97.8	95.5	U	95.5	93.9	U	93.9	124	U	124	96.6	U	96.6	102	U	102	101	U	101
Dibenz (a,h) anthracene	3470		923	97.8	U	97.8	95.5	U	95.5	93.9	U	93.9	124	U	124	96.6	U	96.6	102	U	102	101	U	101
Dibenzofuran	928		185	196	U	196	191	U	191	188	U	188	248	U	248	193	U	193	204	U	204	202	U	202
Fluoranthene	49100		4610	160		48.9	47.8	U	47.8	47	U	47	61.9	U	61.9	48.3	U	48.3	51	U	51	50.4	U	50.4
Fluorene	1770		46.1	48.9	U	48.9	47.8	U	47.8	47	U	47	61.9	U	61.9	48.3	U	48.3	51	U	51	50.4	U	50.4
Indeno (1,2,3-cd) pyrene	16100		923	97.8	U	97.8	95.5	U	95.5	93.9	U	93.9	124	U	124	96.6	U	96.6	102	U	102	101	U	101
Naphthalene	621		46.1	48.9	U	48.9	47.8	U	47.8	47	U	47	61.9	U	61.9	48.3	U	48.3	51	U	51	50.4	U	50.4
Nitrobenzene	185	U	185	196	U	196	191	U	191	188	U	188	248	U	248	193	U	193	204	U	204	202	U	202
Pentachlorophenol	92.3	U	9.3	97.8	U	97.8	95.5	U	95.5	93.9	U	93.9	124	U	124	96.6	U	96.6	102	U	102	101	U	101
Phenanthrene	25600		4610	208		48.9	47.8	U	47.8	**62.3**		47	61.9	U	61.9	48.3	U	48.3	51	U	51	50.4	U	50.4
Phenol	185	U	185	196	U	196	191	U	191	188	U	188	248	U	248	193	U	193	204	U	204	202	U	202
Pyrene	41400		4610	183	J	48.9	47.8	U	47.8	47	U	47	61.9	U	61.9	48.3	U	48.3	51	U	51	50.4	U	50.4
% Solids	89.27			83.83			86.43			88.3			67.21			83.84			81.17			81.29		
U = Undetected at Reporting Limit J = The identification of the analyte is acceptable; the reported concentration is an estimate.																							
Reference	Ref. 35, pp. 7, 128-130. Ref. 3, pp. 12-13, 24, 28, 89-90, 96, 146, 171, 292-294			Ref. 35, pp. 7, 131-133. Ref. 3, pp. 12-13, 24, 28, 89-90, 96, 146, 171, 295-297			Ref. 35, pp. 7, 134-136. Ref. 3, pp. 12-13, 24, 28, 89-90, 96, 146, 171, 298-300			Ref. 35, pp. 7, 137-139. Ref. 3, pp. 12-13, 24, 28, 89-90, 96, 146, 171, 301-303			Ref. 35, pp. 7, 140-142. Ref. 3, pp. 12-13, 24, 28, 89-90, 96, 146, 171, 304-306			Ref. 35, pp. 7, 143-145. Ref. 3, pp. 12-13, 24, 28, 89-90, 96, 146, 171, 307-309			Ref. 35, pp. 7, 146-148. Ref. 3, pp. 12-13, 24, 28, 89-90, 96, 146, 171, 310-312			Ref. 35, pp. 7, 149-151. Ref. 3, pp. 12-13, 24, 28, 89-90, 96, 146, 171, 313-315		
Chain of Custody	Ref. 35, p. 180			Ref. 35, p. 180			Ref. 35, p. 180			Ref. 35, p. 180			Ref. 35, p. 180			Ref. 35, p. 180			Ref. 35, p. 180			Ref. 35, p. 180		

Table 10 – Source Characterization Soil Samples

Table 10									
Sample Number:	CC-0213-HRS			CC-0219-HRS			CC-0220-HRS		
Sampling Location:	A6Z9-035			A6Z9-034			A6Z9-034		
Sample Description:	Drying Area South 4-6 ft			Drying Area North 8-9 ft.			Drying Area North 10-12 ft		
Units:	µg/Kg			µg/Kg			µg/Kg		
Parameter	Result	Flag	RL	Result	Flag	RL	Result	Flag	RL
1,1'-Biphenyl	199	U	199	**3990**		3710	**3270**		2820
2-Methylnaphthalene	49.7	U	49.7	**205**		92.9	**13400**		706
Acenaphthene	49.7	U	49.7	**55400**		**9290**	**15100**		706
Acenaphthylene	49.7	U	49.7	**699**		**92.9**	**568**		70.6
Anthracene	49.7	U	49.7	**23000**		929	**6510**		706
Benzo (a) anthracene	99.5	U	99.5	**25100**		1860	**5770**		1410
Benzo (a) pyrene	**118**		99.5	**11100**		1860	**2740**		141
Benzo (b) fluoranthene	**225**		99.5	**14100**		1860	**2900**		1410
Benzo (g,h,i) perylene	99.5	U	99.5	1,120 (112)	J H	186	437		141
Benzo (k) fluoranthene	**150**		99.5	**10300**		1860	**2610**		1410
Chrysene	**152**		99.5	**18700**		1860	**4560**		1410
Dibenz (a,h) anthracene	99.5	U	99.5	1,290 (129)	J H	186	**262**		141
Fluoranthene	246		49.7	**134000**		9290	**26300**		706
Fluorene	49.7	U	49.7	**80300**		9290	**17900**		706
Indeno (1,2,3-cd) pyrene	**114**		99.5	1,680 (168)	J H	186	**830**		141
Naphthalene	**63.2**		49.7	**359**		92.9	**30500**		7060
Phenanthrene	128		49.7	**156000**		9290	**50900**		7060
Pyrene	208		49.7	**81800**		9290	**16100**		706
% Solids	83.47			88.61			85.97		

Bold = detected above Reporting Limits and 3 x above background
RL = Reporting Limit
U = Undetected at Reporting Limit
H = Biased high
J = The identification of the analyte is acceptable; the reported concentration is an estimate.

Reference	Ref. 35, pp. 6, 35-37. Ref. 3, pp. 17-18, 24, 28, 85, 94, 199-201	Ref. 35, pp. 6, 56-58. Ref. 3, pp. 17-18, 24, 28, 85, 95, 220-222	Ref. 35, pp. 6, 59-61. Ref. 3, pp. 17-18, 24, 28, 85, 95, 223-225
Chain of Custody	Ref. 35, p. 178	Ref. 35, p. 179	Ref. 35, p. 179
Data QA (Quality Review)		Ref. 35, pp. 1-4; Ref. 4, pp. 8, 14-15	

2.2.3 Hazardous Substances Available to a Pathway

Because containment for this source is greater than zero, the following substances associated with the source can migrate via the Ground Water and Surface Water Pathways (Ref. 1, Sec. 4.1.2.1.2.1.1):

1,1'-Biphenyl
2-Methylnaphthalene
Acenaphthene
Acenaphthylene
Anthracene
Benzo (a) anthracene
Benzo (a) pyrene
Benzo (b) fluoranthene
Benzo (g,h,i) perylene
Benzo (k) fluoranthene
Carbazole
Chrysene
Dibenz (a,h) anthracene
Fluoranthene
Fluorene
Indeno (1,2,3-cd) pyrene
Naphthalene
Phenanthrene
Pyrene

2.4.2.1.1 Hazardous Constituent Quantity

The total Hazardous Constituent Quantity for Source 5 could not be adequately determined according to the HRS requirements; that is, the total mass of all CERCLA hazardous substances in the source and releases from the source is not known and cannot be estimated with reasonable confidence (Ref. 1, pp. 51590-51591, Section 2.4.2.1.1). Insufficient historical and current data (manifests, potentially responsible party [PRP] records, State records, permits, waste concentration data, etc.) are available to adequately calculate the total mass of all CERCLA hazardous substances in the source and the associated releases from the source. Therefore, there is insufficient information to calculate a total or partial Hazardous Constituent Quantity estimate for Source 5 with reasonable confidence.

Hazardous Constituent Quantity Value (S): Not Calculated
Are the data complete for hazardous constituent quantity for this area? No

2.4.2.1.2 Hazardous Wastestream Quantity

The total Hazardous Wastestream Quantity for Source 5 could not be adequately determined according to the HRS requirements; that is, the total mass of all hazardous wastestreams and CERCLA pollutants and contaminants for the source and releases from the source is not known and cannot be estimated with reasonable confidence (Ref. 1, p. 51591, Section 2.4.2.1.2). Insufficient historical and current data (manifests, PRP records, State records, permits, waste concentration data, annual reports, etc.) are available to adequately calculate the total mass of all hazardous wastestreams and CERCLA pollutants and contaminants for the source and the associated releases from the source. Therefore, there is insufficient information to adequately calculate or extrapolate a total or partial Hazardous Wastestream Quantity for Source 5 with reasonable confidence.

Hazardous Wastestream Quantity Value (W): Not Calculated
Are the data complete for hazardous constituent quantity for this area? No

2.4.2.1.3 Volume

The information available is not sufficient to evaluate Tier C because the depth of contamination is not known throughout the source; therefore, it is not possible to adequately determine a source volume (Tier C) in cubic yards (yd^3) (Ref. 1, Sec. 2.4.2.1.3, p. 51591). As a result, the evaluation of source volume proceeds to the evaluation of Tier D, source area (Ref. 1, Sec. 2.4.2.1.4, p. 51591).

Dimension of source (yd^3 or gallons): Not Calculated
Volume Assigned Value: 0
Are the data complete for volume quantity for this area? No

2.4.2.1.4 Area

The approximate area of the former tram track/drying area is unknown, but determined to be greater than 0 (Ref. 13, pp. 1-8).

Area of source (ft^2): >0
Area Assigned Value: >0
References: Ref. 1, Sec. 2.4.2.1.4

2.4.2.1.5 Source Hazardous Waste Quantity Value

Measures	Surface Water, Ground Water and Air Pathways	Soil Exposure Pathway (Ref. 1, Sec. 5.2.2.2)
Tier A	NC	NS
Tier B	NC	NS
Tier C	NC	NS
Tier D	>0	NS
Assigned Source Hazardous Waste Quantity Value (Ref. 1, Sec. 2.4.2.1.5)	>0	NS

NC = Not calculated
NS = Not scored

The highest value assigned to either Tier A, Tier B, Tier C, or Tier D is assigned as the Source No. 5 Hazardous Waste Quantity Value (Ref. 1, Section 2.4.2.1.5). The highest value assigned is Tier D.

Source No. 5 Hazardous Waste Quantity Value: >0

2.2 SOURCE CHARACTERIZATION

2.2.1 Source Identification

The following information corresponds to the sixth source identified for this documentation record.

Number of the source: Source No. 6

Name and description of the source: Lumber Piles (contaminated soil)

Lumber Piles: Based on the Sanborn map, a large tramway or trolley system was evident that was used to transport lumber to and from the treatment area and to the drying area (Ref. 13, pp. 4-9). The historical aerial photographs from 1940 and 1953 also depict lumber stacks. The lumber stacks are not present in the 1959 aerial photograph, which is consistent with the operation period (Ref. 14, pp. 1-4). Three soil samples were collected from 2 boring locations in the area identified as the Lumber Piles. A Geoprobe was used to advance soil borings using push probe technology at two locations in this area (Figure 4). The borings were advanced to a maximum depth of 10 feet below ground surface (bgs) using the procedures in the EPA Environmental Response Team (ERT) Standard Operating Procedure (SOP) 2050, modified for the actual unit used by the driller. Grab soil samples were collected from each boring, at a location of visual contamination or where toxic gas sensor (photoionization detector - PID) readings above background were obtained from a MultiRae gas meter (Ref. 3, p. 3, Appendix F; Ref. 34, p Ref. 34, pp. 6-7, 16, 20).

- location A6Z9-037, samples CC-0223-HRS – North 2 to 4 ft bgs (Ref. 3, pp. 24, 28, 46-47, 85, 89, 156); and
- location A6Z9-038, samples CC-0230-HRS – South 2 to 4 ft bgs (Ref. 3, pp. 24, 28, 46-47, 85, 89, 157).

Samples were analyzed for semi-volatiles (Ref. 35, pp. 7, 122-127, 179, 180).

The hazardous substances associated with this source are polynuclear aromatic hydrocarbons (PAHs).

Location of the source, with reference to a map of the site:

Source No. 6 is located on the western side of the facility (Fig. 4).

Source Type for HRS evaluation purposes: Contaminated Soil

Containment

Gas release to air: The air migration pathway was not scored; therefore, gas release to air containment was not evaluated.

Particulate release to air: The air migration pathway was not scored; therefore, particulate containment was not evaluated.

Release to ground water: There is no documentation or evidence to indicate that the source was lined.

Release via overland migration and/or flood: There is no documentation or evidence to indicate that the source was lined. This source receives a containment value of 10 (Ref. 1, Table 4-2).

2.2.2 Hazardous Substances Associated with a Source

Background levels were established from samples collected outside the area of historical operations. The highest concentration of each substance was selected to identify the established background level (Table 11). All samples were analyzed for Target Compound Semivolatiles (SVOCs) by the EPA Houston Laboratory using Method CLP-LM04.2 GC/MS.

The samples designated as background samples were collected from the same medium as the characterization samples (i.e., soil) using similar sample collection methods (Ref. 3, pp. 1-13). The background sample was collected northeast and north of Source No. 1 where no designated operations were known to have taken place. All soil samples were collected from the same sample intervals (Ref. 3, Appendix F). The Soil Survey for Washington Parish, Louisiana was reviewed to determine the similarity of soil types within the area of concern (Ref. 36, pp. 1-8).

The substances listed in Table 12 were present in soil samples collected from the lumber piles area. The samples contained concentrations of hazardous substances equal to or greater than their corresponding RLs and were significantly greater than the background levels (concentrations were at least three times greater than the background levels).

Table 11 – Background Soil Samples

Table 11

Sample Number:	CC-0233-HRS			CC-0234-HRS			CC-0235-HRS			CC-0236-HRS			CC-0237-HRS			CC-0238-HRS			CC-0239-HRS			CC-0240-HRS		
Sampling Location:	A6Z9-060			A6Z9-060			A6Z9-060			A6Z9-060			A6Z9-060			A6Z9-060			A6Z9-060			A6Z9-060		
Sample Description	0-2 ft depth			2 to 4 ft depth			4-6 ft depth			6-8 ft depth			8-10 ft depth			10-12 ft depth			12-14 ft depth			14-16 ft depth		
Units:	µg/Kg			µg/Kg			µg/Kg			µg/Kg			µg/Kg			µg/Kg			µg/Kg			µg/Kg		
Parameter	Result	Flag	RL	Result	Flag	RL	Result	Flag	RL	Result	Flag	RL	Result	Flag	RL	Result	Flag	RL	Result	Flag	RL	Result	Flag	RL
1,1'-Biphenyl	185	U	185	196	U	196	191	U	191	188	U	188	248	U	248	193	U	193	204	U	204	202	U	202
2-Methylnaphthalene	674		46.1	48.9	U	48.9	47.8	U	47.8	47	U	47	61.9	U	61.9	48.3	U	48.3	51	U	51	50.4	U	50.4
Acenaphthene	1400		46.1	48.9	U	48.9	47.8	U	47.8	47	U	47	61.9	U	61.9	48.3	U	48.3	51	U	51	50.4	U	50.4
Acenaphthylene	743		46.1	48.9	U	48.9	47.8	U	47.8	47	U	47	61.9	U	61.9	48.3	U	48.3	51	U	51	50.4	U	50.4
Anthracene	4550		461	142		48.9	47.8	U	47.8	**61.2**		47	61.9	U	61.9	48.3	U	48.3	51	U	51	50.4	U	50.4
Benzo (a) anthracene	26200		9230	97.8	U	97.8	95.5	U	95.5	93.9	U	93.9	124	U	124	96.6	U	96.6	102	U	102	101	U	101
Benzo (a) pyrene	27900		9230	97.8	U	97.8	95.5	U	95.5	93.9	U	93.9	124	U	124	96.6	U	96.6	102	U	102	101	U	101
Benzo (b) fluoranthene	31400		9230	97.8	U	97.8	95.5	U	95.5	93.9	U	93.9	124	U	124	96.6	U	96.6	102	U	102	101	U	101
Benzo (g,h,i) perylene	9610		923	97.8	U	97.8	95.5	U	95.5	93.9	U	93.9	124	U	124	96.6	U	96.6	102	U	102	101	U	101
Benzo (k) fluoranthene	23800		9230	97.8	U	97.8	95.5	U	95.5	93.9	U	93.9	124	U	124	96.6	U	96.6	102	U	102	101	U	101
Chrysene	28900		9230	97.8	U	97.8	95.5	U	95.5	93.9	U	93.9	124	U	124	96.6	U	96.6	102	U	102	101	U	101
Dibenz (a,h) anthracene	3470		923	97.8	U	97.8	95.5	U	95.5	93.9	U	93.9	124	U	124	96.6	U	96.6	102	U	102	101	U	101
Dibenzofuran	928		185	196	U	196	191	U	191	188	U	188	248	U	248	193	U	193	204	U	204	202	U	202
Fluoranthene	49100		4610	160		48.9	47.8	U	47.8	47	U	47	61.9	U	61.9	48.3	U	48.3	51	U	51	50.4	U	50.4
Fluorene	1770		46.1	48.9	U	48.9	47.8	U	47.8	47	U	47	61.9	U	61.9	48.3	U	48.3	51	U	51	50.4	U	50.4
Indeno (1,2,3-cd) pyrene	16100		923	97.8	U	97.8	95.5	U	95.5	93.9	U	93.9	124	U	124	96.6	U	96.6	102	U	102	101	U	101
Naphthalene	621		46.1	48.9	U	48.9	47.8	U	47.8	47	U	47	61.9	U	61.9	48.3	U	48.3	51	U	51	50.4	U	50.4
Nitrobenzene	185	U	185	196	U	196	191	U	191	188	U	188	248	U	248	193	U	193	204	U	204	202	U	202
Pentachlorophenol	92.3	U	9.3	97.8	U	97.8	95.5	U	95.5	93.9	U	93.9	124	U	124	96.6	U	96.6	102	U	102	101	U	101
Phenanthrene	25600		4610	208		48.9	47.8	U	47.8	**62.3**		47	61.9	U	61.9	48.3	U	48.3	51	U	51	50.4	U	50.4
Phenol	185	U	185	196	U	196	191	U	191	188	U	188	248	U	248	193	U	193	204	U	204	202	U	202
Pyrene	41400		4610	183	J	48.9	47.8	U	47.8	47	U	47	61.9	U	61.9	48.3	U	48.3	51	U	51	50.4	U	50.4
% Solids	89.27			83.83			86.43			88.3			67.21			83.84			81.17			81.29		

U = Undetected at Reporting Limit
J = The identification of the analyte is acceptable; the reported concentration is an estimate.

Reference	Ref. 35, pp. 7, 128-130. Ref. 3, pp. 12-13, 24, 28, 89-90, 96, 146, 171, 292-294	Ref. 35, pp. 7, 131-133. Ref. 3, pp. 12-13, 24, 28, 89-90, 96, 146, 171, 295-297	Ref. 35, pp. 7, 134-136. Ref. 3, pp. 12-13, 24, 28, 89-90, 96, 146, 171, 298-300	Ref. 35, pp. 7, 137-139. Ref. 3, pp. 12-13, 24, 28, 89-90, 96, 146, 171, 301-303	Ref. 35, pp. 7, 140-142. Ref. 3, pp. 12-13, 24, 28, 89-90, 96, 146, 171, 304-306	Ref. 35, pp. 7, 143-145. Ref. 3, pp. 12-13, 24, 28, 89-90, 96, 146, 171, 307-309	Ref. 35, pp. 7, 146-148. Ref. 3, pp. 12-13, 24, 28, 89-90, 96, 146, 171, 310-312	Ref. 35, pp. 7, 149-151. Ref. 3, pp. 12-13, 24, 28, 89-90, 96, 146, 171, 313-315
Chain of Custody	Ref. 35, p. 180	Ref. 35, p. 180	Ref. 35, p. 180	Ref. 35, p. 180	Ref. 35, p. 180	Ref. 35, p. 180	Ref. 35, p. 180	Ref. 35, p. 180

Table 12 – Source Characterization Soil Samples

Table 12						
Sample Number:	CC-0223-HRS			CC-0230-HRS		
Sample Location:	A6Z9-037			A6Z9-038		
Sample Description:	Lumber Pile Area North 2-4 ft			Lumber Pile Area South 2-4 ft		
Units:	µg/Kg			µg/Kg		
Parameter	Result	Flag	RL	Result	Flag	RL
Acenaphthene	53.8	U	53.8	**241**		49.8
Acenaphthylene	53.8	U	53.8	**1240**		49.8
Acetophenone	215	U	215	199	U	199
Anthracene	53.8	U	53.8	**1820**		498
Benzo (a) anthracene	**374**		108	**13500**		996
Benzo (a) pyrene	**840**		108	**18900**		9960
Benzo (b) fluoranthene	**2080**		108	**41600**		9960
Benzo (g,h,i) perylene	**349**		108	**7820**		996
Benzo (k) fluoranthene	**1140**		108	**20000**		9960
Chrysene	**681**		108	**28300**		9960
Dibenz (a,h) anthracene	**162**		108	**2400**		996
Dibenzofuran	215	U	215	**201**		199
Fluoranthene	478		53.8	**50000**		4980
Fluorene	53.8	U	53.8	**325**		49.8
Indeno (1,2,3-cd) pyrene	**645**		108	**14500**		996
Naphthalene	53.8	U	53.8	**337**		49.8
Phenanthrene	82.7		53.8	**4010**		498
Pyrene	**631**		53.8	**42300**		4980
% Solids	76.04			83.25		
Bold = detected above Reporting Limits abd 3x background U = Undetected at Reporting Limit RL = Reporting Limit J = The identification of the analyte is acceptable; the reported concentration is an estimate.						
Reference	Ref. 35, pp.7, 122-124. Ref. 3, pp. 18-19, 24, 28, 85, 89, 96, 156, 171, 286-288			Ref. 35, pp. 7, 125-127. Ref. 3, pp. 18-19, 24, 28, 85, 89, 96, 157, 171, 289-291		
Chain of Custody	Ref. 35, p. 180			Ref. 35, p. 180		

2.2.3 Hazardous Substances Available to a Pathway

Because containment for this source is greater than zero, the following substances associated with the source can migrate via the Surface Water Pathway (Ref. 1, Sec. 4.1.2.1.2.1.1):

Acenaphthene
Acenaphthylene
Anthracene
Benzo (a) anthracene
Benzo (a) pyrene
Benzo (b) fluoranthene
Benzo (g,h,i) perylene
Benzo (k) fluoranthene
Carbazole
Chrysene
Dibenz (a,h) anthracene
Dibenzofuran
Fluoranthene
Fluorene
Indeno (1,2,3-cd) pyrene
Naphthalene
Phenanthrene
Pyrene

2.4.2.1.1 Hazardous Constituent Quantity

The total Hazardous Constituent Quantity for Source 6 could not be adequately determined according to the HRS requirements; that is, the total mass of all CERCLA hazardous substances in the source and releases from the source is not known and cannot be estimated with reasonable confidence (Ref. 1, pp. 51590-51591, Section 2.4.2.1.1). Insufficient historical and current data (manifests, potentially responsible party [PRP] records, State records, permits, waste concentration data, etc.) are available to adequately calculate the total mass of all CERCLA hazardous substances in the source and the associated releases from the source. Therefore, there is insufficient information to calculate a total or partial Hazardous Constituent Quantity estimate for Source 6 with reasonable confidence.

Hazardous Constituent Quantity Value (S): Not Calculated
Are the data complete for hazardous constituent quantity for this area? No

2.4.2.1.2 Hazardous Wastestream Quantity

The total Hazardous Wastestream Quantity for Source 6 could not be adequately determined according to the HRS requirements; that is, the total mass of all hazardous wastestreams and CERCLA pollutants and contaminants for the source and releases from the source is not known and cannot be estimated with reasonable confidence (Ref. 1, p. 51591, Section 2.4.2.1.2). Insufficient historical and current data (manifests, PRP records, State records, permits, waste concentration data, annual reports, etc.) are available to adequately calculate the total mass of all hazardous wastestreams and CERCLA pollutants and contaminants for the source and the associated releases from the source. Therefore, there is insufficient information to adequately calculate or extrapolate a total or partial Hazardous Wastestream Quantity for Source 6 with reasonable confidence.

Hazardous Wastestream Quantity Value (W): Not Calculated
Are the data complete for hazardous constituent quantity for this area? No

2.4.2.1.3 Volume

The information available is not sufficient to evaluate Tier C because the depth of contamination is not known throughout the source; therefore, it is not possible to adequately determine a source volume (Tier C) in cubic yards (yd^3) (Ref. 1, Sec. 2.4.2.1.3, p. 51591). As a result, the evaluation of source volume proceeds to the evaluation of Tier D, source area (Ref. 1, Sec. 2.4.2.1.4, p. 51591).

Dimension of source (yd^3 or gallons): Not Calculated
Volume Assigned Value: 0
Are the data complete for volume quantity for this area? No

2.4.2.1.4 Area

The approximate area of the lumber pile area is unknown, but is an area greater than 0 (Ref. 13).

Area of source (ft^2): >0
Area Assigned Value: >0
References: Ref. 1, Sec. 2.4.2.1.4

2.4.2.1.5 Source Hazardous Waste Quantity Value

Measures	Surface Water, Ground Water and Air Pathways	Soil Exposure Pathway (Ref. 1, Sec. 5.2.2.2)
Tier A	NC	NS
Tier B	NC	NS
Tier C	NC	NS
Tier D	>0	NS
Assigned Source Hazardous Waste Quantity Value (Ref. 1, Sec. 2.4.2.1.5)	>0	NS

NC = Not calculated
NS = Not scored

The highest value assigned to either Tier A, Tier B, Tier C, or Tier D is assigned as the Source No. 6 Hazardous Waste Quantity Value (Ref. 1, Section 2.4.2.1.5). The highest value assigned is Tier D.

Source No. 6 Hazardous Waste Quantity Value: >0

2.4.2.2.5 Calculation of Hazardous Waste Quantity Factor Value

SITE SUMMARY OF SOURCE DESCRIPTIONS

			Containment			
	Source Hazardous Waste Quantity Value				Air	
Source No.	Surface Water Migration Pathway	Soil Exposure Pathway	Ground Water	Surface Water	Gas	Air Particulate
1	>0	NS	NS	10	NS	NS
2	>0	NS	NS	10	NS	NS
3	769.23	NS	NS	10	NS	NS
4	615.38	NS	NS	10	NS	NS
5	>0	NS	NS	10	NS	NS
6	>0	NS	NS	10	NS	NS
Total	1,384.61					

NS: Not Scored

4.0 SURFACE WATER MIGRATION PATHWAY

4.1 OVERLAND/FLOOD MIGRATION COMPONENT

4.1.1.1 Definition of Hazardous Substance Migration Path for Overland/Flood Component

General Considerations:

Surface runoff from Source Nos. 4 and 6 flows into the on-property (Source No. 1-the common drainage) drainage ditch on the southeastern side of the property. Surface runoff from Source No. 2, 3, and 5 eventually flows into depressed areas located on the western boundary adjacent to the Illinois Central Gulf railroad siding. The siding originated on the property to provide service when the facility in the operation (Figure 4, Figure 5; Ref. 5, p. 1; Ref. 13, pp. 4-9). The migration route of all sources flows toward one probable point of entry (PPE). Both drainage ditches flow southwest until joining at the southern corner of the facility, north of Redwood Avenue. From this point, flow continues in a drainage ditch parallel to and on the eastern side of the railroad right-of-way to Yellow Branch, a perennial surface water body. The PPE begins sample No. A6Z9-20 where emergent and forested wetlands which meet the definition of 40 CFR 230.3 contiguous to Yellow begin; these wetlands extend 1500 feet until Yellow Branch (Figure 5, Ref. 16; Ref. 39, p. 1).Yellow Branch flows to the southeast for 2.31 miles into Dead River, which flows southeast for 0.86 miles into the Pearl River. The remaining 11.54 miles of the 15-mile surface water pathway is within the Pearl River (Figure 5, Figure 6, Ref. 5, and Ref. 44).

Definition of Overland Segment and Probable Point of Entry (PPE)

PPE

Surface Water Pathway Description for Each Source		
Source No	**Pathway Description**	**PPE**
1	Source No. 1 (the common drainage) is contaminated soil in the on-property drainage ditch that received drainage from site activities	PPE- 1: Emergent wetlands contiguous with Yellow Branch
2	Intermittent rills and sheet flow (approximately 100 feet) to railroad siding on western side of facility. Distance to the PPE is approximately 3,200 feet.	PPE – 1: Emergent wetlands contiguous with Yellow Branch
3	Intermittent rills and sheet flow (approximately 50 feet) southwest the railroad siding. Distance to the PPE is approximately 2,500 feet.	PPE – 1: Emergent wetlands contiguous with Yellow Branch
4	Sheet flow (approximately 50 feet) south to on-property drainage ditch. Distance to the PPE is approximately 2,000 feet.	PPE – 1: Emergent wetlands contiguous with Yellow Branch

Surface Water Pathway Description for Each Source		
5	Sheet flow (approximately 50 feet) southwest to railroad siding. Distance to the PPE is approximately 1,900 feet.	PPE – 1: Emergent wetlands contiguous with Yellow Branch
6	Sheet flow (approximately 500 feet) south to on-property drainage ditch. Distance to the PPE is approximately 1,800 feet.	PPE – 1: Emergent wetlands contiguous with Yellow Branch

The distance to the PPE from Source 1 was measured from the most down gradient contaminated sediment sample location (A6Z9-52) from Source No. 1 to the PPE where sample No. A6Z9-20 was collected. This location has emergent and forested wetlands which meet the definition of 40 CFR 230.3 and are contiguous to Yellow Branch (Figure 5, Ref. 16; Ref. 39, p. 1).

Definition of In-Water Segments

Segment 1

The distance from the PPE to Yellow Branch is approximately 1,500 feet. No published average stream flow data is available for this segment. Based on visual observation, it appears that this portion has an average stream flow of less than 10 cubic feet per second (cfs) and is a minimal stream and receives a dilution weight of 1 (Ref. 1, Table 4-13; Figure 5, Figure 6; Ref. 16, p. 1).

Segment 2

Yellow Branch flows for approximately 2.31 miles until its confluence with the Dead River. No published average stream flow data is available for Yellow Branch. The flow rate at the target location was extrapolated using the flow data from Pearl River (Ref, 46 pp. 1-3). This segment will be set to equal the flow at the downstream gauging station and will be considered to be a small to moderate stream and will be assigned a dilution value of 0.1 (Ref. 1, Table 4-13; Figure 6).

Segment 3

The Dead River meanders south for approximately 0.86 until the confluence with the Pearl River. The flow rate at the target location was extrapolated using the flow data from Pearl River (Ref, 46 pp. 1-3). This segment will be set to equal the flow at the downstream gauging station and will be considered to be a moderate to large stream and will be assigned a dilution value of 0.01 (Ref. 1, Table 4-13; Figure 6).

Segment 4

The remaining 11.83 miles of the 15-mile surface water pathway is within the Pearl River (Figure 6). A gauging station located near Bogalusa on the Pearl River has shown a stream flow of 27,782 cfs (Ref. 46, p. 2). A river with an average annual stream flow greater than 10,000 cfs and less than 100,000 cfs receives a dilution value of 0.0001 (Ref. 1, Table 4-13).

4.1.2.1 Likelihood of Release

Chemical Analyses:

The sediment sample from the PPE, location A6Z9-020, sample CC-206-HRS, contained elevated concentrations significantly above background of the following: acenaphthylene, benzo(a)pyrene, benzo(b)fluoranthene, benzo(g,h,i)pyrene, benzo(k)fluoranthene, chrysene, dibenz(a,h)anthracene, indeno(1,2,3-cd)pyrene, and pyrene (Figure 5; see Table 13 of this HRS documentation record). This sample was compared to the background sediment sample (Location A6Z9-041/Sample No. CC-0200-HRS) collected upstream from the drainage ditch (Figure 5).

Sample location AZ69-023 represents a background sample for the Yellow Branch River. The sediment sample was collected upstream of the confluence of the common drainage ditch and the Yellow Branch River (Figure 5). Photo DSCN2406 shows the background sampling location (Ref. 3, p. 63).

One downstream sediment sample was collected from the Yellow Branch. This sample, location A6Z9-024, sample CC-205-HRS, was collected downstream of the PPE from the Yellow Branch near the confluence of the common drainage and Yellow Branch (Figure 5). Sample CC-0205-HRS contained elevated concentrations significantly above background of the following: acenaphthylene, benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, benzo(g,h,i)perylene, benzo(k)fluoranthene, chrysene, dibenz(a,h)anthracene, fluoranthene, indeno(1,2,3-cd)pyrene, and pyrene (see Table 13 of this HRS documentation record).

An observed release by chemical analysis of the sediment samples collected at the PPE into the wetlands and in Yellow Branch is analytical evidence of a hazardous substance in the media significantly above background.

See Table 13 for background sediment and release sample concentrations.

Table 13 – Background and Release Sediment Samples

Table 13												
Sample Number:	CC-0200-HRS			CC-0206-HRS			CC-0204-HRS			CC-0205-HRS		
Sampling Location:	A6Z9-041			A6Z9-020			A6Z9-023			A6Z9-024		
Sample Description	Background Common Ditch			(PPE) Common ditch discharge to wetland (0-6 in, bgs)			Background, upgradient Yellow Branch (0-6 in, bgs)			Yellow Branch, Downgradient (0-6 in, bgs)		
Units:	µg/Kg			µg/Kg			µg/Kg			µg/Kg		
Parameter	Result	Flag	RL	Result	Flag	RL	Result	Flag	RL	Result	Flag	RL
Acenaphthylene	59.4	U	59.4	**233**		82.8	54.7	U	54.7	**156**		48.3
Anthracene	59.4	U	59.4	342 (34.2)	J H	82.8	54.7	U	54.7	77.4 (7.74)	J H	48.3
Benzo (a) anthracene	119	U	119	1,150 (115)	J H	166	109	U	109	**1690**		966
Benzo (a) pyrene	119	U	119	**2560**		166	109	U	109	**1780**		966
Benzo (b) fluoranthene	156		119	4,930 (493)	J H	1660	109	U	109	**2830**		966
Benzo (g,h,i) perylene	119	U	119	**772**		166	109	U	109	**551**		96.6
Benzo (k) fluoranthene	119	U	119	**2560**		166	109	U	109	**1680**		966
Chrysene	119	U	119	**2050**		1660	109	U	109	**1920**		966
Dibenz (a,h) anthracene	119	U	119	**279**		166	109	U	109	**196**		96.6
Fluoranthene	72.9		59.4	1,240 (124)	J H	82.8	54.7	U	54.7	**2230**		483
Indeno (1,2,3-cd) pyrene	119	U	119	**1210**		166	109	U	109	**921**		96.6
Phenanthrene	78.6		59.4	307 (30.7)	J H	82.8	54.7	U	54.7	166 (16.6)	J H	48.3
Pyrene	142		59.4	**3450**		828	54.7	U	54.7	**4310**		483
% Solids	68.67			49.75			74.55			82.88		
Bold = detected above Reporting Limits U = Undetected at Reporting Limit RL = Reporting Limit J = The identification of the analyte is acceptable; the reported concentration is an estimate because of failing internal standards (ISTD).				bgs = below ground surface H = Biased High								
Reference	Ref. 35, pp. 6, 104-106. Ref. 3, pp. 25, 29, 72, 88.			Ref. 35, pp.6, 8-10; Ref. 3, pp. 13, 25, 29, 64, 87, 94, 170, 172-174			Ref. 35, pp.6, 14-16; Ref. 3, pp. 13, 29, 61-63, 87, 90, 170			Ref. 35, pp.6, 17-19; Ref. 3, pp. 13, 29, 60-62, 87, 90, 170		
Chain of Custody	Ref. 35, p. 180			Ref. 35, p. 178			Ref. 35, p. 178			Ref. 35, p. 178		
Data QA (Quality Review)				Ref. 35, pp. 1-4; Ref. 4, pp. 8, 14-15						Ref. 35, pp. 1-4; Ref. 4, pp. 8, 14-15		

Attribution:

Colonial Creosoting operated as a wood treater utilizing creosote at the Bogalusa, Louisiana location from 1915 to 1953 (Ref. 11, p. 2). Treatment cylinders, storage tanks, drying area and associated infrastructure were documented on Sanborn maps and historical aerial photographs (Ref. 13, pp. 4-9, Ref. 14, pp. 1-5). Source Nos. 1-6 contained hazardous substances indicative of creosote (Ref 3 pp. 13-19). In 1993, the Louisiana Department of Environmental Quality (LDEQ) conducted a site assessment of the facility and reported that the facility's drainage entered a drainage ditch on the east side of the property. It was reported by the City of Bogalusa and LDEQ that the ditch had stained areas from creosote (Ref. 11, pp. 5, 6, 37-38). In addition, samples collected for the EPA START Site Inspection and Expanded Site Inspection contained creosote constituents. Analytical samples collected by LDEQ and by EPA START samples collected in the source areas contain concentrations of PAHs (Ref. 3, pp. 4-8). Creosote is present along historic drainage pathways as documented by visual observations (Ref. 11, p. 37-38).

Coal tar creosotes, coal tar, coal tar pitch, and coal tar pitch volatiles are composed of many individual compounds of varying physical and chemical characteristics. In addition, the composition of each, although referred to by specific name (e.g., coal tar creosote) is not consistent. Usually, coal tars are viscous liquids or semisolids that are black or dark brown with a naphthalene-like odor. Coal tars are complex combinations of polycyclic aromatic hydrocarbons (PAHs), phenols, heterocyclic oxygen, sulfur, and nitrogen compounds. By comparison, coal tar creosotes have an oily liquid consistency and range in color from yellowish-dark green to brown. The coal tar creosotes consist of PAHs and PAH derivatives. At least 75% of the coal tar creosote mixture is PAHs. Coal tar pitch is a shiny, dark brown-to-black residue that contains PAHs and their methyl and polymethyl derivatives, as well as heteronuclear compounds. Coal tar creosote, coal tar, and coal tar products are used as wood preservatives, herbicides, fungicides, insecticides, and disinfectants (Ref. 38, pp. 2-4; Ref. 37, pp. 21-23).

Two sediment samples were collected from two locations in Yellow Branch (Figure 3). Location A6Z9-023, Sample CC-0204-HRS (Background), and Location A6Z9-024, sample CC-0205-HRS (Ref. 35).

In the release sediment sample from Yellow Branch, acenaphthylene, benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, benzo(g,h,i)perylene, benzo(k)fluoranthene, chrysene, dibenzo(a,h)anthracene, fluoranthene, indeno(1,2,3-cd)pyrene, and pyrene were all detected at concentrations greater than three time background concentrations (see Table 13 of this HRS documentation record).

Sample No. A6Z90-44 was collected at the confluence of the off-property drainage ditch and the common drainage to determine if any other sources could be migrating onto the facility (Table 2; Figure 5). The sample had the same constituents as the other sediment samples collected from the common ditch scored as Source 1 and which received drainage from all site sources (Ref. 35, pp. 6, 113-115, Ref. 3, pp. 13-14, 25, 29, 69, 88, 96, 170, 277-279) . There are no other industries located within a 1-mile radius of the facility or upgradient that might be responsible for the PAH contamination in the PPE or the wetlands (Ref. 7, p. 1). Residential areas are located northeast,

east and south of the facility (Ref 5 pp. 1-4). Up-gradient samples did not have any PAHs. High levels of PAHs in the % range were detected in the sources and free product was observed (PID measurements, visual, and olfactory) on the facility.

Observed Release Factor Value: 550

4.1.3.2 HUMAN FOOD CHAIN THREAT - WASTE CHARACTERISTICS

4.1.3.2.1 Toxicity/Persistence/Bioaccumulation

Hazardous Substance	Source No.	Toxicity Factor Value	Persistence Factor Value	Toxicity/ Persistence Factor Value (Table 4-12)	Bioaccumulation Factor Value **	Toxicity/Persistence / Bioaccumulation Factor Value (Table 4-16)	Reference
Acenaphthylene	1-6, OR	1	0.4	4	500	200	Ref. 1, Table 4-12, 4-16; Ref. 2, pp. 1-13
Anthracene	1-6	10	0.4	4	50,000	200,000	
Benzo(a)anthracene	1-6, OR	1,000	1.0	1,000	50,000	50,000,000	
Benzo(a)pyrene	1-6, OR	10,000	1.0	10,000	50,000	500,000,000	
Benzo(b)fluoranthene	1-6, OR	NL	NL	NL	NL	NL	
Benzo(k)fluoranthene	1-6, OR	100	1.0	100	50,000	5,000,000	
Chrysene	1-6, OR	10	1.0	10	5	50	
Dibenz(a,h)anthracene	1-6, OR	10,000	1.0	10,000	50,000	500,000,000	
Fluorene	1-6	100	0.4	40	500	20,000	
Fluoranthene	1-6, OR	100	1.0	100	5,000	500,000	
Indeno(1,2,3-cd)pyrene	1-6, OR	1,000	1.0	1,000	50,000	50,000,000	
2-Methylnaphthalene	1-6	1,000	0.4	400	50,000	20,000,000	
Phenanthrene	1-6	1	0.4	0.40	5,000	2,000	
Pyrene	1-6, OR	100	1.0	100	50,000	5,000,000	

* Persistence values assigned are based on River.
**Bioaccumulation values are assigned based on the surface category of fresh water
NL – Not listed in the Superfund Chemical Data Matrix
OR – Substance documented in the observed release.

The hazardous substances with the highest Toxicity/Persistence/Bioaccumulation Factor Value are benzo(a)pyrene and dibenz(a,h)anthracene.

Toxicity/Persistence/Bioaccumulation Factor Value: 500,000,000

4.1.3.2.2 Hazardous Waste Quantity

Source Number	Source Hazardous Waste Quantity Value (Section 2.4.2.1.5)	Is Source Hazardous Constituent Quantity Data Complete? (yes/no)
1	>0	No
2	>0	No
3	769.23	No
4	615.38	No
5	>0	No
6	>0	No
TOTAL	1,384.61	

The sum (rounded to the nearest integer) of the source hazardous waste quantity values is assigned as the Hazardous Waste Quantity Factor Value (Ref.1, Sec. 2.4.2.2). For a Hazardous Waste Quantity range of greater than 100 to 10,000, a value of 100 is assigned for the migration pathway (Ref. 1, Sec. 2.4.2.2, Table 2-6).

Sum of Values: 1,385
Hazardous Waste Quantity Assigned: 100

4.1.3.2.3 Waste Characteristics Factor Category Value

The waste characteristics factor category value is assigned based on the Waste Characteristics Product. The Waste Characteristics Product is the product of the Toxicity/Persistence Factor Value, the Hazardous Waste Quantity Factor Value, and Bioaccumulation Potential Factor Value. Values from the substances with the highest Toxicity/Persistence/Bioaccumulation factor value for the watershed, benzo(a)pyrene and dibenz(a,h)anthracene, will be used.

Toxicity/Persistence Factor Value: 10,000
x Hazardous Waste Quantity Factor Value: 100

(Toxicity/Persistence x Hazardous Waste Quantity):
$10{,}000 \text{ X } 100 = 1 \text{ X } 10^{6}$
(Subject to a maximum product of $1.0 \text{ x } 10^{8}$

Bioaccumulation Potential Factor Value: 50,000
(Toxicity/Persistence x Hazardous Waste Quantity) x
Bioaccumulation Potential Factor Value:

$(1 \text{ X } 10^{6}) \text{ X } (50{,}000) = 5.0 \text{ X } 10^{10}$

A Waste Characteristics Product value of $5.0 \text{ X } 10^{10}$ receives a waste characteristics factor value of 320 (Ref. 1, Table 2-7).

Hazardous Waste Quantity Assigned Value: 100
Waste Characteristics Factor Category Value: 320

4.1.3.3 HUMAN FOOD CHAIN THREAT-TARGETS

4.1.3.3.1 Food Chain Individual

Spotted Bass, Bluegill, and longear sunfish are caught and consumed from Yellow Branch (Ref. 38, p. 1). Dead River is also fished for human consumption (Ref. 43, p. 1). The Pearl River is fished recreationally and commercially (Ref. 17, p. 18; Ref. 43, p. 1-2; Figures 1 and 6). A food chain individual factor value of 20 is assigned based on an observed release by chemical analyses of acenaphthylene, benzo(a)anthracene, benzo(a)pyrene, benzo(k)fluoranthene, dibenz(a,h)anthracene, fluoranthene, indeno(1,2,3-cd)pyrene, and pyrene with a Bioaccumulation Factor Value of 500 or greater to sediments within the surface water target distance limit, and due to a fishery is present within the 15-mile TDL of the in water segment (Ref.1, Sec. 4.1.3.3.1; Ref. 2, pp.1-13; Ref. 38, p.1; 43, p. 1) (see Sec. 4.1.3.2.1).

Food Chain Individual Factor Value: 20

4.1.3.3.2 Population

The Population Factor for the watershed is based on three factors: Level I concentrations, Level II concentrations, and potential human food chain contamination.

4.1.3.3.2.1 Level I Concentrations

There are no Level I concentrations established because there were no tissue samples collected (Ref. 1, Sec. 4.1.3.3.2.1).

4.1.3.3.2.2 Level II Concentrations

No Level II concentrations have been established within a fishery (Ref. 1, Sec. 4.1.3.3.2.2).

4.1.3.3.2.3 Potential Human Food Chain Contamination

Recreation fishing is common in Yellow Branch. Commercial fishing is conducted within Dead River and the Pearl River (Ref. 17, p. 18; Ref. 38, p. 1; Ref. 43, p. 1; Figures 1 and 6). The Louisiana Department of Wildlife and Fisheries (LDWF) does not keep records on pounds of fish caught and consumed annually per water body; therefore, it will be assumed that at least more than zero (>0) and less than 100 (<100) pounds per year are consumed annually (Ref. 1,Tables 4-13, 4-18; Ref. 17, p. 18; Ref. 38, p. 1). The flow rate for the Yellow Branch is assumed to be a small to moderate stream and Dead River is assumed to be a moderate to large stream.

Identity of Fishery	Annual Production (pounds)	Type of Surface Water Body	Average Annual Flow	Population Value (P_i)	Dilution Weight (D_i)	$P_i x D_i$	Reference
Yellow Branch	>0-100	Small to Moderate stream	>10 to 100 cfs	0.03	0.1	0.003	Ref.1, Tables 4-13, 4-18; Ref. 38, p. 1; Ref. 46, p. 1
Dead River	>0-100	Moderate to large stream	>100 to 1,000 cfs	0.03	0.01	0.0003	Ref. 1, Tables 4-13, 4-18 Ref. 43, p. 1; Ref. 46, p. 1

Sum: 0.0033
(Sum of P1 x 01)/10: 0.00033

Potential Human Food Chain Contamination
Factor Value: 3.3 X 10^{-4}

4.1.3.3.2.4 Calculation of Population Factor Value

The population factor value is equal to:

Level I Concentrations (0) + Level II Concentrations (0) + Potential Human Food Chain Contamination (0.00033) = 0.00033.

A value of 3.3×10^{-4} is assigned as the Population Factor Value.

Population Factor Value: 3.3×10^{-4}

4.1.3.3.3 Calculation of Human Food Chain Threat- Targets Factor Category Value

The Human Food Chain Threat - Targets Factor Category value is calculated by summing the food chain individual and population factor values for the watershed:

Food Chain Individual + Population Factor= 20 + 0.00033 = 20.00033

Target Factor Category Value: 20.00033

4.1.3.4 Calculation of Human Food Chain Threat Score for a Watershed

The Human Food Chain Threat score is calculated by multiplying the human food chain threat factor category values for likelihood of release, waste characteristics, and targets for the watershed (Ref. 1, Section 4.1.3.4).

Likelihood of Release (550) x Waste Characteristics (320) x Targets (20.00033) = 3,520,058.08 (rounded to the nearest integer).

This product is then divided by 82,500:

$$3{,}520{,}058 \div 82{,}500 = 42.66$$

The resulting value, subject to a maximum of 100, is assigned as the Human Food Chain Threat Score.

Human Food Chain Threat Score= 42.66

4.1.4.2 ENVIRONMENTAL THREAT- WASTE CHARACTERISTICS

4.1.4.2.1 Ecosystem Toxicity/Persistence/Bioaccumulation

Hazardous Substance	Source No.	Ecosystem Toxicity Factor Value	Persistence Factor Value	Ecosystem Bioaccumulation Value	Ecosystem Toxicity/Persistence Factor Value	Ecosystem Toxicity/Persistence/ Bioaccumulation Factor Value	Reference
Acenaphthylene	1-6, OR	0	0.4	500	0	0	Ref. 1, Table 4-20, 4-21; Ref. 2, pp. 1-13
Anthracene	1-6	10,000	0.4	50,000	4,000	200,000,000	
Benzo(a)anthracene	1-6, OR	10,000	1.0	50,000	10,000	500,000,000	
Benzo(a)pyrene	1-6, OR	10,000	1.0	50,000	10,000	500,000,000	
Benzo(b)fluoranthene	1-6, OR	NL	NL	NL	NL	NL	
Benzo(k) fluoranthene	1-6, OR	0	1.0	50,000	0	0	
Chrysene	1-6, OR	1,000	1.0	5,000	1,000	5,000,000	
Dibenz (a,h) anthracene)	1-6, OR	0	1.0	50,000	0	0	
Fluorene	1-6	1,000	0.4	5,000	400	2,000,000	
Fluoranthene	1-6, OR	10,000	1.0	5,000	10,000	50,000,000	
Indeno (1,2,3-cd) pyrene	1-6, OR	0	1.0	50,000	0	0	
2-Methylnaphthalene	1-6	100	0.4	50,000	40	2,000,000	
Pentachlorophenol	1-6	100	1.0	50,000	100	5,000,000	
Phenanthrene	1-6	10,000	0.4	50,000	4,000	200,000,000	
Pyrene	1-6, OR	10,000	1.0	50,000	10,000	500,000,000	

* Persistence values assigned are based on River.
**Ecosystem Toxicity and Ecosystem Bioaccumulation values are assigned based on the surface category of fresh water
NL – Not Listed in the Superfund Chemical Data Matrix
OR – Substance documented in the observed release.

The contaminants with the highest Ecosystem Toxicity/Persistence/Bioaccumulation Factor Value are benzo(a)anthracene, benzo(a)pyrene and pyrene (Ref. 1, Table 4-21; Ref. 2, pp. 1-13).

Ecosystem Toxicity/Persistence/Bioaccumulation Factor Value: 500,000,000

4.1.4.2.2 Hazardous Waste Quantity

Source Number	Source Hazardous Waste Quantity Value (Section 2.4.2.1.5)	Is Source Hazardous Constituent Quantity Data Complete? (yes/no)
1	>0	No
2	>0	No
3	769.23	No
4	615.38	No
5	>0	No
6	>0	No
TOTAL	1,384.61	

The sum of the source hazardous waste quantity values is assigned as the Hazardous Waste Quantity Factor Value (Ref. 1, Sec. 2.4.2.2). The sum of the source hazardous waste quantity values for Surface Water Pathway, rounded to the nearest integer, is 1,385. For a Hazardous Waste Quantity range of greater than 100 to 10,000, a value of 100 is assigned from Ref. 1, Table 2-6 for the migration pathway (Ref. 1, Sec. 2.4.2.2, Table 2-6).

Sum of Values: 1,385
Hazardous Waste Quantity Factor Value: 100

4.1.4.2.3 Waste Characteristics Factor Category Value

A Waste Characteristics Factor Category Value is assigned based on the Waste Characteristic Product. The Waste Characteristic Product is the product of the Ecosystem Toxicity/Persistence/ Factor Value, the Hazardous Waste Quantity Factor Value, and the Ecosystem Bioaccumulation Potential Factor Value.

Using HRS Table 4-20 and the table in section 4.1.4.2.1 above, the Ecosystem Toxicity/Persistence value for benzo(a)pyrene, benzo(a)anthracene, and pyrene is 10,000.

A Hazardous Waste Quantity Factor Value of 100 is assigned from the sum of Source Hazardous Waste Quantity Value and the documented observed release (Ref. 1, Section 2.4.2.2, Table 2-6).

Ecosystem Toxicity/Persistence Factor Value= 10,000
Hazardous Waste Quantity Factor Value = 100
$10{,}000 \text{ X } 100 = 1.0 \text{ X } 10^{6}$
(Subject to a maximum product of $1.0 \text{ x } 10^{8}$

The Ecosystem Bioaccumulation Value for benzo(a)anthracene, benzo(a)pyrene, and pyrene is 50,000 (Ref. 2, p. 1, 2, 8).

Ecosystem Bioaccumulation Value = 50,000

(Ecosystem Toxicity/Persistence x Hazardous Waste Quantity) x Bioaccumulation Factor Value:

$(1 \text{ X } 10^{6}) \text{X } (50{,}000) = 5 \text{ X } 10^{10})$

(Subject to a maximum product of $1 \text{ x } 10^{12}$)

A Waste Characteristics Product Value of $5 \text{ x } 10^{10}$ receives a Waste Characteristic Factor Value of 320 (Ref. 1, Table 2-7).

Ecosystem Toxicity/Persistence Factor Value
x Hazardous Waste Quantity Factor Value: $5 \text{ x } 10^{10}$
Waste Characteristics Factor Value: 320

4.1.4.3 ENVIRONMENTAL THREAT- TARGETS

4.1.4.3.1 Sensitive Environments

4.1.4.3.1.1 Level I Concentrations

No water, benthic, or tissue samples have been collected within the Surface Water Pathway; therefore, Level I concentrations are not being scored (Ref. 1, Sec. 4.1.4.3.1.1).

Level I Concentrations Factor Value: 0

4.1.4.3.1.2 Level II Concentrations

A wetland delineation survey was conducted during field activities in December 2012 (Ref. 39, pp. 3-4). Wetlands meeting the definition in 40 CFR 230.3 were identified on-site and are contiguous with Yellow Branch (Ref. 16, p. 1; Ref. 39, pp. 4, 11-13, 17, 19-22; Ref. 40, p. 20; Figure 5). Level II concentrations have been established in the wetlands by chemical analyses of sediment samples that met observed release criteria (see Table 13 of this HRS documentation record). The frontage of wetlands subject to Level II contamination is approximately 2,950 feet. This measurement is determined by the distance from sample location A6Z9-020 to A6Z9-024 and includes wetland frontage on both sides of the drainage ditch and subtracts the frontage portion that is under Marshall Richardson Road (Ref. 16, p. 1; Figure 5). A value of 25 is assigned from Table 4-24 of the HRS for length of wetlands from >0.1 to 1 mile (Ref. 1, Sec.4.1.4.3.1.2). The upgradient wetlands are not scored because no perennial/HRS-eligible connection between these wetlands and the downgradient wetlands could be established, and thus the upgradient wetlands must be treated as a separate watershed for HRS scoring purposes.

Threatened and endangered species have been reported within the general area; however, it is not known if their habitats overlap the zone of Level II contamination.

These other sensitive environments will not be evaluated. The Level II concentration factor value is the sum of the wetlands value (25) and sensitive environments value (0):

$$25 + 0 = 25$$

Level II Concentrations Factor Value: 25
(Ref. 1, Sec.4.1.4.3.1.2 and Table 4-24)

4.1.4.3.1.3 Potential Contamination

Wetlands
Persistent emergent and Palustrine forested wetlands are located on the frontage along Yellow Branch, Dead River, and Pearl River. These wetlands meet the criteria as defined in 40 CFR 230.3 (Ref. 42, pp. 1 – 4; Figure 6). The wetland frontage was measured on the scaled maps included on the National Wetland Inventory (NWI) maps provided in Ref. 42.

Type of Surface Water Body	Wetland Frontage	Reference	Wetland Value (Ref. 1, Table 4-24)
Yellow Branch	4.6	Ref. 42, Figure 6	150
Dead River	1.72	Ref. 42, Figure 6	50
Pearl River	23.66	Ref. 42, Figure 6	500

To obtain the Potential Contamination Factor Value, the sum of the sensitive environments value is added to the wetland value, which is then multiplied by the assigned dilution for each in-water segment. This value is then divided by 10 to obtain the Potential Contamination Factor Value (Ref. 1, Section 4.1.4.3.1.3).

Type of Surface Water Body	Sum of Sensitive Environment Values (Sj)	Wetland Frontage Value (Dj) 1.1 (Ref. 1, Table 4-24)	Adjusted Dilution Weight (Aj) (Ref. 1, Table 4-13)	Aj(Dj + Sj)
Yellow Branch	0	150	0.1	15
Dead River	0	50	0.01	0.5
Pearl River	0	500	0.0001	0.05

Potential Contamination Factor Value
15.55 / 10 = 1.555; rounded to the nearest integer
(Ref. 1, Sec. 4.1.4.3.1.3)

Potential Contamination Factor Value: 2

4.1.4.3.1.4 Environmental Threat- Targets Factor Category Value

The environmental threat target factor category value for the watershed is the sum of the values for the Level l (0), Level II (25), and Potential Contamination factors (2) (Ref. 1, Section 4.1.4.3.1.4).

$$0 + 25 + 2 = 27$$

4.1.4.4 Calculation of Environmental Threat Score

The environmental threat score is calculated by multiplying the environmental threat factor category values for likelihood of release (550), waste characteristics (320), and targets (27) for the watershed; rounding the product to the nearest integer; and dividing by 82,500. The resulting value (57.60), subject to a maximum of 60, is assigned as the environmental threat score for the watershed (Ref. 1, Sections 4.1.4.4 and 4.1.4.3.1.4).

Calculations:

$$550 \text{ X } 320 \text{ X } 27 = 4{,}752{,}000 \text{ -:- } 82{,}500 = 57.60$$
(subject to a maximum of 60)

4.1.5 Calculation of Overland/Flood Migration Component Score for a Watershed

The overland/flood migration component score for the watershed is calculated by summing the scores for the drinking water threat (0), human food chain threat (42.66), and environmental threat (57.60) assigned as the surface water overland/flood migration component score for a watershed (Ref. 1, Section 4.1.5).

Calculations:

$$0 + 42.66 + 57.60 = 100.26$$
(subject to a maximum value of 100)

4.1.6 Calculation of Overland/Flood Migration Component Score

The highest surface water overland/flood migration component score from the watersheds evaluated (in this case, only one watershed was evaluated) is selected and assigned as the surface water overland/flood migration component score for the site, subject to a maximum of 100. The overland/flood migration component score is assigned a value of 100.00 (Ref. 1, Section 4.1.6).

4.2 GROUND WATER TO SURFACE WATER MIGRATION COMPONENT

This component was not scored because an observed release was documented for the overland flow/flood component.

4.3 CALCULATION OF SURFACE WATER MIGRATION PATHWAY SCORE

The overland/flood migration component was scored and this value (100.00) is assigned to the surface water migration pathway score.

Ground Water to Surface Water Factor Value: NS
Surface Water Migration Pathway Score: 100.00